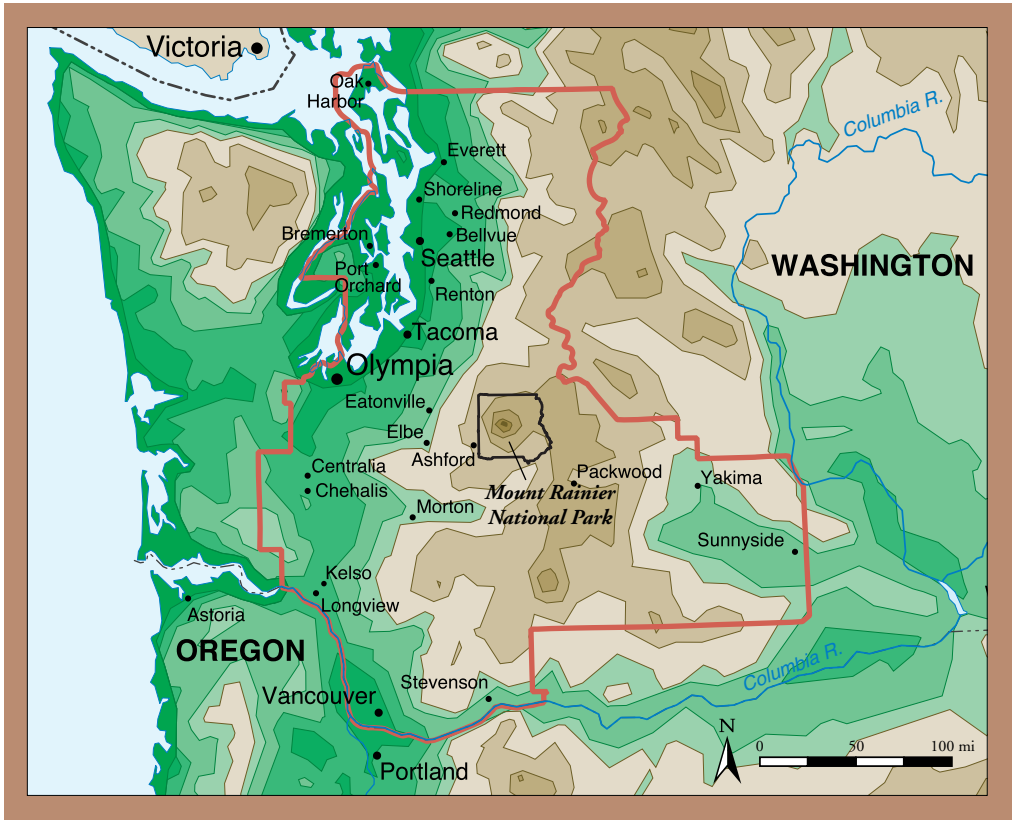
A Socioeconomic Atlas for



Mount Rainier National Park and its Region

2002

A Socioeconomic Atlas for Mount Rainier National Park and its Region

by

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2002

Acknowledgments

We would like to express our appreciation to the staff of Mount Rainier National Park, especially Jonathan B. Jarvis, Bryan Bowden, and Eric Walkinshaw, for their continued enthusiasm and support throughout this pilot project. Nina Chambers was instrumental in developing the project: she obtained data, organized and calculated data sets, and compiled other needed information. Brendan Clarke prepared and carried out the initial design of the base maps. He also helped compute data sets and did much of the initial GIS work.

About this Atlas

This atlas is one of a series of four pilot atlases produced by the National Park Service Social Science Program. The objective of this project is to demonstrate the feasibility and usefulness of such atlases for units of the National Park System. The other three atlases depict socioeconomic indicators for the regions surrounding Harpers Ferry National Historical Park, Joshua Tree National Park, and Wilson's Creek National Battlefield. For more information about the atlas series, contact: Dr. Jean McKendry, National Park Service, Social Science Program, 1849 C Street NW (3127), Washington DC 20240 (jeanm@uidaho.edu).

Preface

Protection of the National Park System requires active and scientifically informed management. If park resources – both natural and cultural – are to be protected for future generations, the NPS must develop efficient ways to monitor the condition and trends of natural and human systems. Such monitoring must provide usable knowledge that managers can apply to the preservation of resources. And the NPS must share this information with surrounding communities, stakeholders and partners, to help them make important choices about their future.

Because of these reasons and more, the NPS has embarked on a significant initiative – the Natural Resource Challenge. This atlas, part of a pilot project, is one component in that effort. It is a tool for park managers, planners, community leaders, and others to use in addressing the challenge of preserving the natural and cultural resources of Mount Rainier National Park. Part of that challenge involves understanding conditions outside park boundaries – conditions which can have significant impacts on park resources. Systematic study and monitoring of regional conditions involves, to a large degree, investigation of human activities. This atlas focuses on such human activities, characterizing them in terms of standardized measures known as socioeconomic indicators.

The atlas can currently serve as a training tool, as an aid to management and planning, and as a means to facilitate public participation. It can be of long-term benefit by establishing baseline data for monitoring changing conditions and trends in the region. Through these and other potential uses, the atlas supports the critical goal of improving park management through a greater reliance on usable scientific knowledge, and contributes to meeting the Natural Resource Challenge.

Gary E. Machlis
Visiting Chief Social Scientist
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Table of Contents

Introduction

The purpose of this atlas is to provide park managers, planners, community leaders, and others with a better understanding of changing human activities and socioeconomic conditions in the region surrounding Mount Rainier National Park. Change in human activities and socioeconomic conditions outside a park's boundaries can create complex park management challenges. Information about regional trends and conditions is needed in order to manage and conserve park resources – both natural and cultural – more effectively. This atlas provides such information in a series of maps, complemented by tables, other graphics, and explanatory text.

Maps are effective ways of conveying information. A map can highlight geographical patterns in data by showing the relationship between *what* is happening and *where* it is happening. For example, a map that shows a park's road network and also shows the locations of traffic accidents may indicate that certain sections of park roadway are particularly hazardous. Or a map that plots where park visitors come from might show that the park is popular with residents from a particular part of the region or the nation.

The maps in this atlas combine *contextual* information (such as boundary lines, roads, and key towns) with *thematic* information (such as demographic or economic statistics). This combination of contextual and thematic information helps the reader observe general trends inherent in the distribution of data. For example, a map that shows the population growth rate for each county in the park region may reveal that all of the highest growth rates are concentrated in counties south of the park.

Each map is designed to allow for easy comparison, so readers can see how conditions and trends in their own counties compare with those in other counties and relate to larger regional patterns. The consistent map design allows readers to make useful comparisons among two or more maps. For example, comparing maps of federal expenditures per person and poverty rates might reveal that federal expenditures tend to be higher in a region's poorer counties.

There are many potential uses for this atlas. For example, park managers can share the atlas with new park staff, regional staff, the media, or policy makers as a way of orienting them to the basic facts about the region. Planners can use the atlas to examine emerging trends outside the park and to prioritize actions to mitigate any anticipated adverse impacts on park resources. Local and regional leaders can consult the atlas to develop environmental policies that support park management goals while remaining responsive to local needs. Researchers can use the atlas to design studies that have practical benefit to park and ecosystem management. Additional uses are discussed in the atlas' concluding section, pages 74 - 75. Regardless of how it is used, the atlas can serve as a useful reference tool that adds to the body of usable scientific knowledge about Mount Rainier National Park and its surrounding region.

Socioeconomic Indicators: Valuable Management Tools

The Relevance of Human Activities to Park Resource Management

The management of park resources always requires attention to human behavior and activities. Protection of a threatened archaeological site can mean educating visitors about the Antiquities Act. Controlling non-native plant species can require close collaboration with park neighbors and volunteers. Preservation of scenic values can depend upon the monitoring of emissions from electrical generation plants several states away.

While there is an on-going and healthy debate about how to address this "human factor" in park management, a consensus has emerged about three basic principles:

- people are part of park ecosystems, and their needs and activities must be considered in management plans;
- park managers should be concerned with short and long-term trends, as well as the local, regional and national consequences of actions; and
- where appropriate, decisions about park resources should be made collaboratively, including federal agencies, local governments, and citizens in the process.

Managing parks in accordance with these principles requires careful planning, for people have many competing needs. Careful planning requires an accurate and objective assessment of current conditions as well as on-going trends. Hence, understanding the social, cultural, and economic characteristics of the park region is crucial for successful park management.

The Value of Socioeconomic Indicators

One approach to understanding social, cultural, and economic conditions and trends is to use *socioeconomic indicators*. Socioeconomic indicators are regularly collected economic or social statistics that describe or predict changes and trends in the general state of society. For example, the consumer price index (CPI) keeps track of changes in the price of a typical group of consumer goods. The CPI is used to monitor inflation, to compare the cost-of-living in one region of the country to another, and to support economic policy-making. Socioeconomic indicators can address historical trends, present conditions, or future projections.

An integrated set of socioeconomic indicators can be effective in presenting the "basic facts" about the people of a region. Such basic facts are important to park management, and can be used in many ways: assessing the potential impact of government policies, developing sound resource management strategies, designing effective interpretive programs, increasing public involvement in the planning process, and so forth. Like measures of water quality or wildlife populations, socioeconomic indicators enable managers and citizens to make scientifically informed decisions concerning public resources.

The Integrated Set of Indicators

The indicators in this atlas are not simply a collection of various statistics displayed in maps, but an integrated set of indicators organized around broad areas of human activity that are of particular relevance to park management. The selection of a broad range of relevant indicators is important because the dynamics of human interaction on a regional scale are complex. For example, the growth of a new industry can influence a rise in immigration, which in turn can influence other human activities such as housing development. While industry, immigration, and housing are categorically different indicators, each one could be important for a park manager trying to anticipate growth issues that might impact park visitation or ecological systems.

The integrated set of indicators displayed in this atlas encompasses six general categories:

- *General population* indicators measure how many people live in a given area, where those people are concentrated, their ages, patterns of migration, and so forth. General population indicators provide a profile of the people who are neighbors to the park and potential partners in park management.

- *Economy and commerce* indicators measure the flow and distribution of money, materials, and labor. Economy and commerce indicators provide an overview of the interdependent economic relationships among people, businesses, industries, and government with the park region.

- *Social and cultural* indicators measure aspects of personal and group identity such as cultural origin, political and religious beliefs, health, and language. Social and cultural indicators provide insights into the varying perceptions and expectations that people bring with them when they go to their place of work, participate in a public meeting, or visit a park interpretive site.

- *Recreation and tourism* indicators measure activities specifically related to the provision of accommodations, entertainment, and personal services. Recreation and tourism indicators provide a way to analyze the economic role that travelers, vacationers, and other recreationists play in the region surrounding the park, which is itself closely linked to the recreation/tourism sector.

- *Administration and government* indicators measure the structure, resources, and actions of government organizations. Administration and government indicators provide an orientation to the role of government – local, state, and federal – in the park region.

- *Land use* indicators measure the interactions between people and terrestrial resources such as land, water supply, and vegetation. Land use indicators provide a way to gauge the impact of human activities such as farming, forestry, and urban development upon ecosystems within the park region.

Selecting Specific Indicators

Drawing from the six general categories of socioeconomic indicators described above, a menu of 85 socioeconomic indicators was developed. Each indicator was determined to be readily available and mappable at the county level. From this menu, 16 *core indicators* were selected that would be common to all atlases published in this pilot series. The core indicators provide information useful to all park managers. Incorporating these core indicators throughout the series of atlases enables park managers to make comparisons among parks in different regions of the country. Mount Rainier NP staff chose additional indicators from the menu described above. Park staff selected these indicators to customize the atlas so that it would target information relevant to their particular management needs. Figure 1 shows the six general categories and the specific indicators included in this atlas; for each category, indicators are listed in the order they appear in the atlas.

The maps in this atlas are based on county-level data wherever possible. County-level data have several advantages. Good quality data are available at this scale, consistently collected at regular intervals, and comparable across all U.S. counties. Also, counties are stable geographic units for monitoring trends, as little change in county boundaries occurs over time. Finally, as administrative and political units, counties significantly influence environmental change and can be important partners in park management.

Technical Notes

Appendix 1 provides the data sources for the indicators presented in this atlas. Appendix 2 provides technical information on the design of the maps. Appendix 3 includes endnotes and text that provide additional information on the measurement of selected indicators.

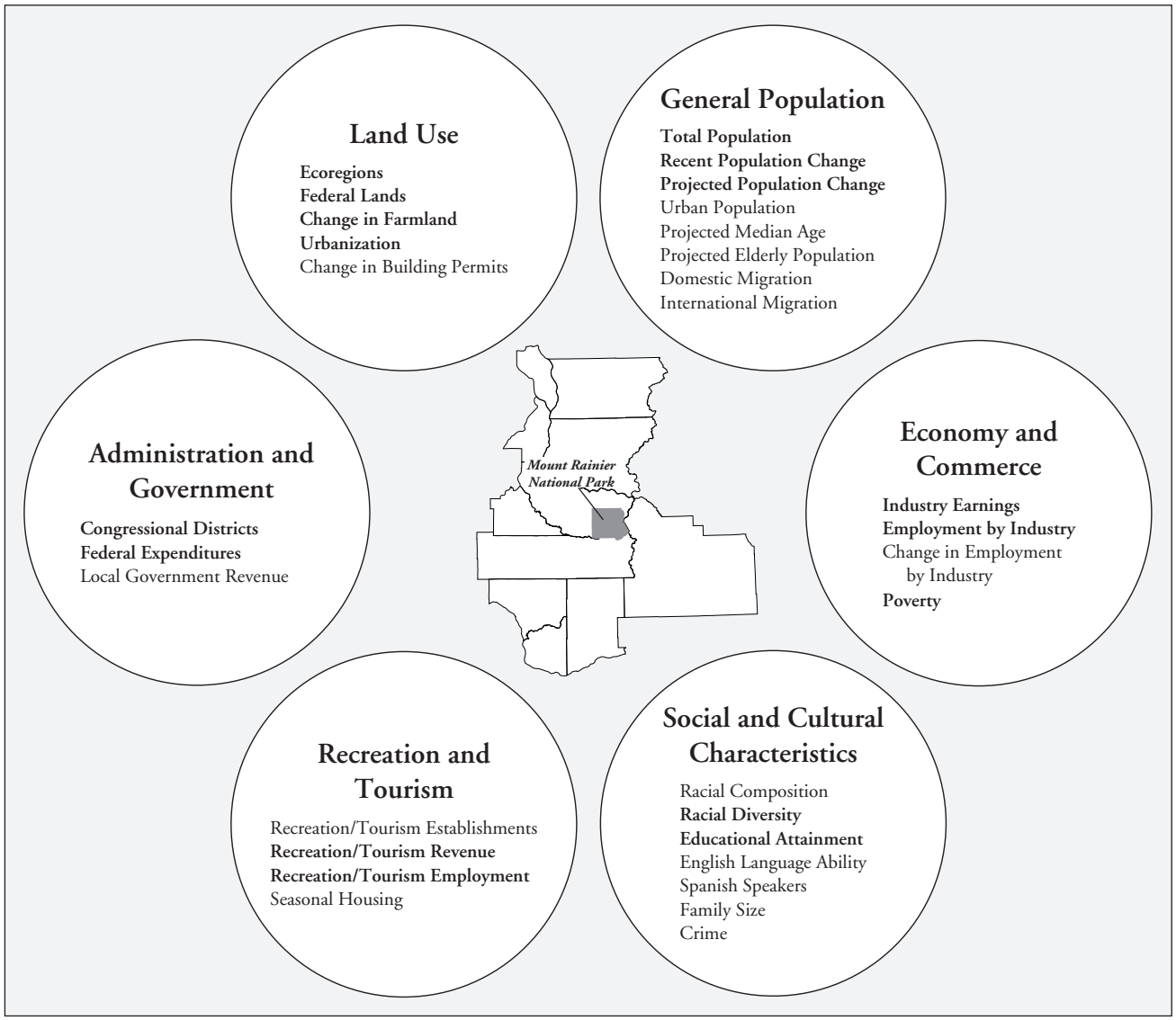


Figure 1. Indicators Included in this Atlas **core indicator** additional indicator

The Region

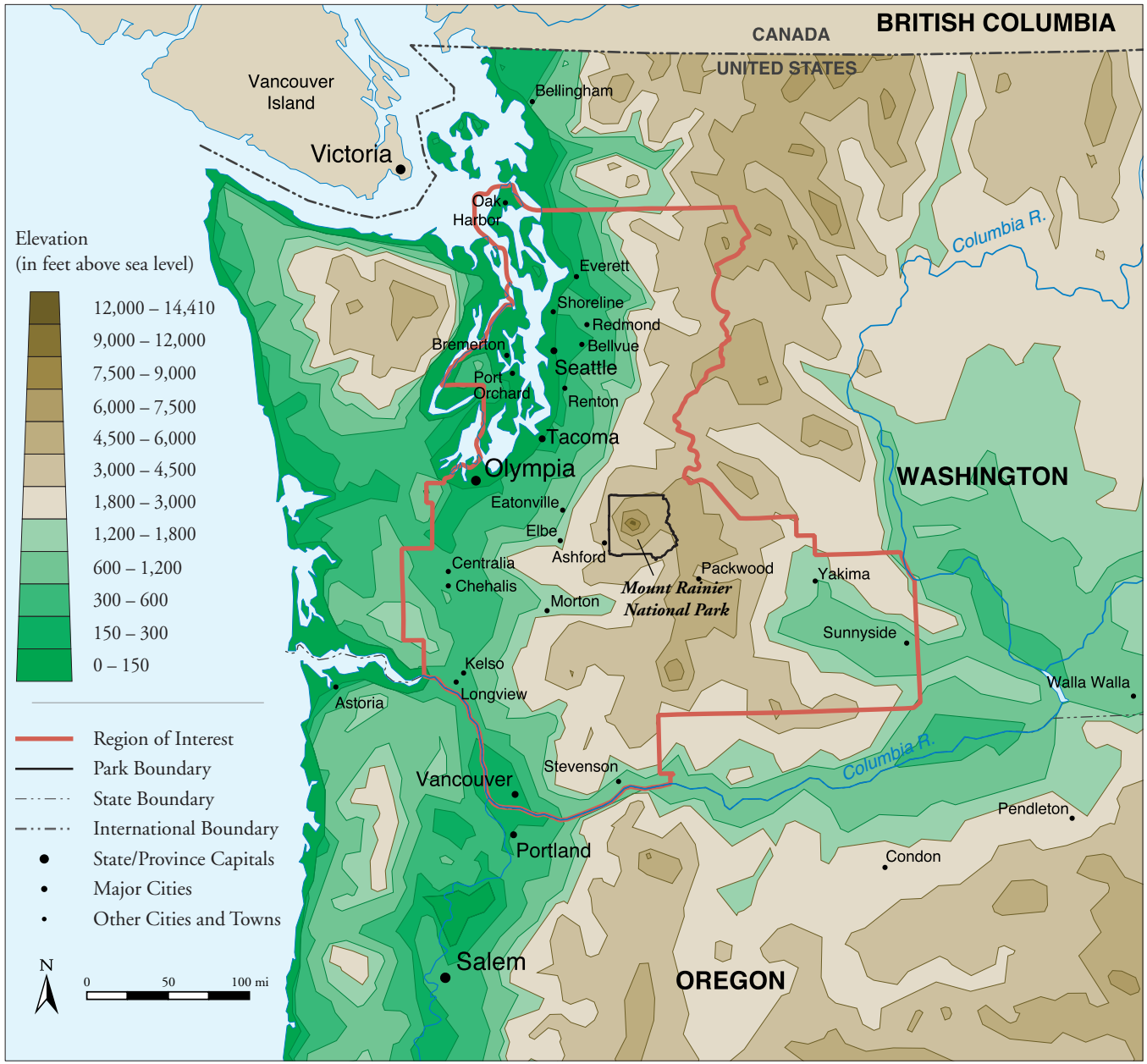
In selecting the boundaries of the region of interest covered by this atlas, Mount Rainier NP staff were asked to define the geographic area that has the most significant impact on the park's management. Because the atlas relies on county-level socioeconomic data, the region of interest was restricted to entire counties, rather than parts of counties. The region thus selected includes eleven counties in west central Washington. The map on the facing page depicts the region in its larger context.

Mount Rainier National Park is located in southeastern Pierce County with its southern boarder extending into Lewis County. It is approximately 80 miles east of Olympia, 100 miles southeast of Seattle, and 150 miles northeast of Portland, Oregon. Ecologically, a marine climate predominates in western Washington; the climate is mild for its latitude due to the presence of the warm North Pacific Current offshore and relatively warm maritime air masses. The region has frequent cloud cover, considerable fog, and frequent rainfall; summer is the driest season. Three geographic features dominate the region: Puget Trough, Cascade Mountain Range and the Columbia Plateau. More than half of the Puget Trough is penetrated by Puget Sound, which contains many islands. The Cascade Mountain Range located to the east of Puget Trough, contains Mount Rainier, which is the highest point in the state at 14,411 feet above sea level. The western slopes of the Cascade Range receive some of the heaviest annual snowfall (in some places more than 200 inches) in the country. The Columbia Plateau, located to the southeast, is a made up of the remains of huge lava flows cut by the Columbia River.

The economy of the Mount Rainier NP region is mixed, with all four sectors of industry (agriculture and natural resources, construction and manufacturing, sales and services, and government) represented. Relatively large crops of wheat, apples and potatoes, along with forestry, make up the agriculture and natural resources sector. The primary manufacturing centers of Seattle and Tacoma produce transportation equipment, especially aircraft, aerospace equipment and shipbuilding. Employment in these industries is heavily dependent on military contracts. Several military installations are located in the Mount Rainier NP region, including: a Trident Nuclear Submarine Base near Bremerton, a navy shipyard in Bremerton, and McCord Airforce Base and Fort Lewis Army Base near Tacoma. Other important manufacturing sectors include lumber, wood, paper and allied products, and processed food. There is also an expanding hi-tech computer industry. The Mount Rainier NP region has a large recreation/tourism industry focused on its scenic mountains and water.

In addition to Mount Rainier NP, the region contains all of several national park units, including Ebey's Landing NH RES, Fort Vancouver NHP, and Klondike Gold Rush NHP.

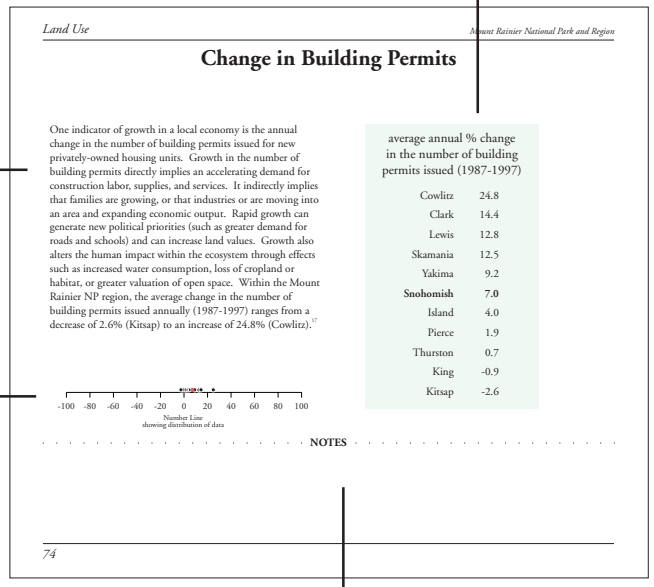
Mount Rainier National Park and its Region



Using the Socioeconomic Indicators and Maps

The socioeconomic indicators for the Mount Rainier National Park region of interest are presented in a series of maps. The best available county-level data are presented for each indicator. The following information is provided for each indicator:

- a brief description of the socioeconomic indicator and an observation about the spatial variation in the data as displayed on the map.
- a table that shows the data and relative rank for each county. The median value is highlighted in **bold**. The table allows the reader to look up and compare specific indicator values for each county.
- a map legend describing how the indicator is measured, the year that the data were gathered, and the range of values for each quartile grouping.
- the name of the general category to which this particular indicator belongs (such as general population or land use). The same base color is used for all indicators in the same general category.


Land Use *Mount Rainier National Park and Region*

Change in Building Permits

One indicator of growth in a local economy is the annual change in the number of building permits issued for new privately-owned housing units. Growth in the number of building permits directly implies an accelerating demand for construction labor, supplies, and services. It indirectly implies that families are growing, or that industries or are moving into an area and expanding economic output. Rapid growth can generate new political priorities (such as greater demand for roads and schools) and can increase land values. Growth also alters the human impact within the ecosystem through effects such as increased water consumption, loss of cropland or habitat, or greater valuation of open space. Within the Mount Rainier NP region, the average change in the number of building permits issued annually (1987-1997) ranges from a decrease of 2.6% (Kitsap) to an increase of 24.8% (Cowlitz).[17]

average annual % change in the number of building permits issued (1987-1997)	
Cowlitz	24.8
Clark	14.4
Lewis	12.8
Skamania	12.5
Yakima	9.2
Snohomish	**7.0**
Island	4.0
Pierce	1.9
Thurston	0.7
King	-0.9
Kitsap	-2.6

-100 -80 -60 -40 -20 0 20 40 60 80 100
Number Line showing distribution of data

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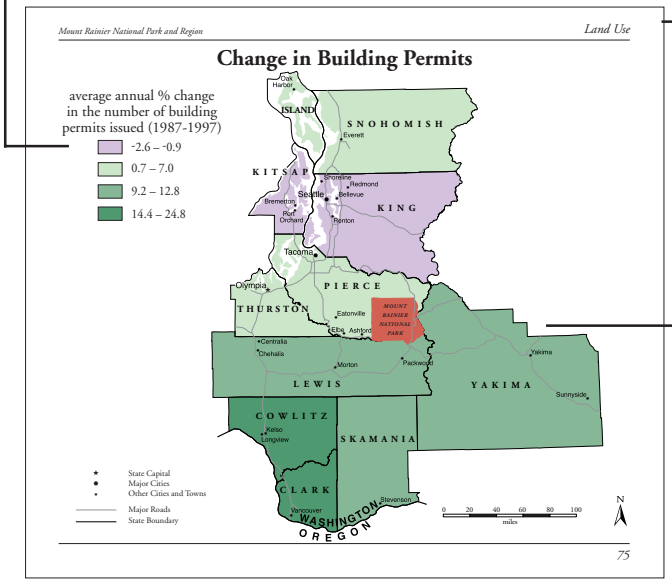
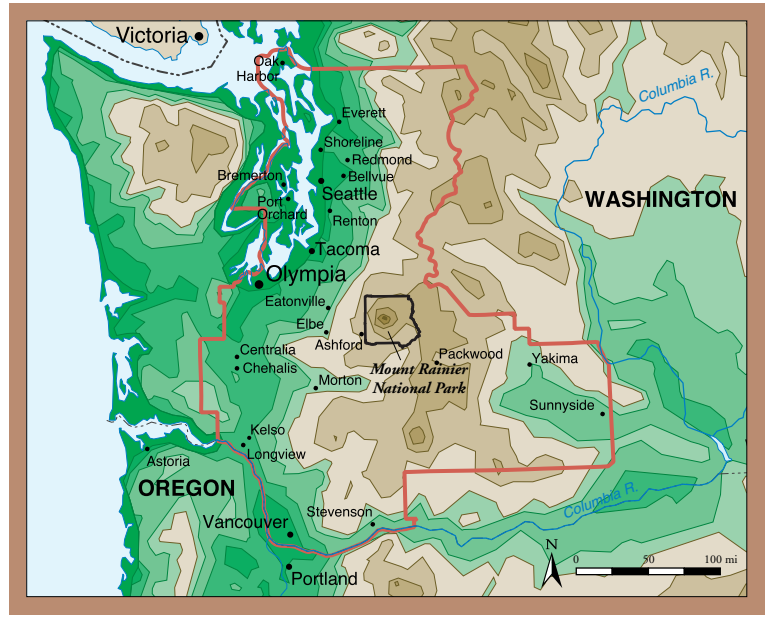
74



75

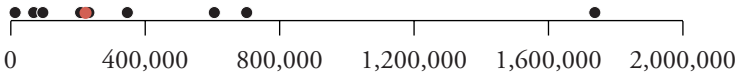
- a number line that shows the distribution of values for the indicator, useful in understanding patterns in the data. The median value is represented by a **red** dot.
- a section for notes. Atlas users can add their own observations about each indicator, and note questions for further analysis.
- a map that displays general trends inherent in the data. For most indicators, counties are grouped into four classes that correspond to four sub-ranges of data values. These groups are called *quartiles*. The highest-ranked quartile receives the darkest shading. For more information on quartile classification, see Appendix 2, page 80.

The Socioeconomic Indicators



Total Population

Population size is one of the most important influences on the character of human activities in a place, and a key influence on resource use. People bring labor, knowledge, and economic activity to a place. At the same time, they generate demand for natural resources, goods and services ranging from food to recreational opportunities. Within the Mount Rainier NP region, county population (2000) ranges from 9,872 (Skamania) to 1,737,034 (King).



Number Line
showing distribution of data

total number of people (2000)	
King	1,737,034
Pierce	700,820
Snohomish	606,024
Clark	345,238
Kitsap	231,969
Yakima	**222,581**
Thurston	207,355
Cowlitz	92,948
Island	71,558
Lewis	68,600
Skamania	9,872

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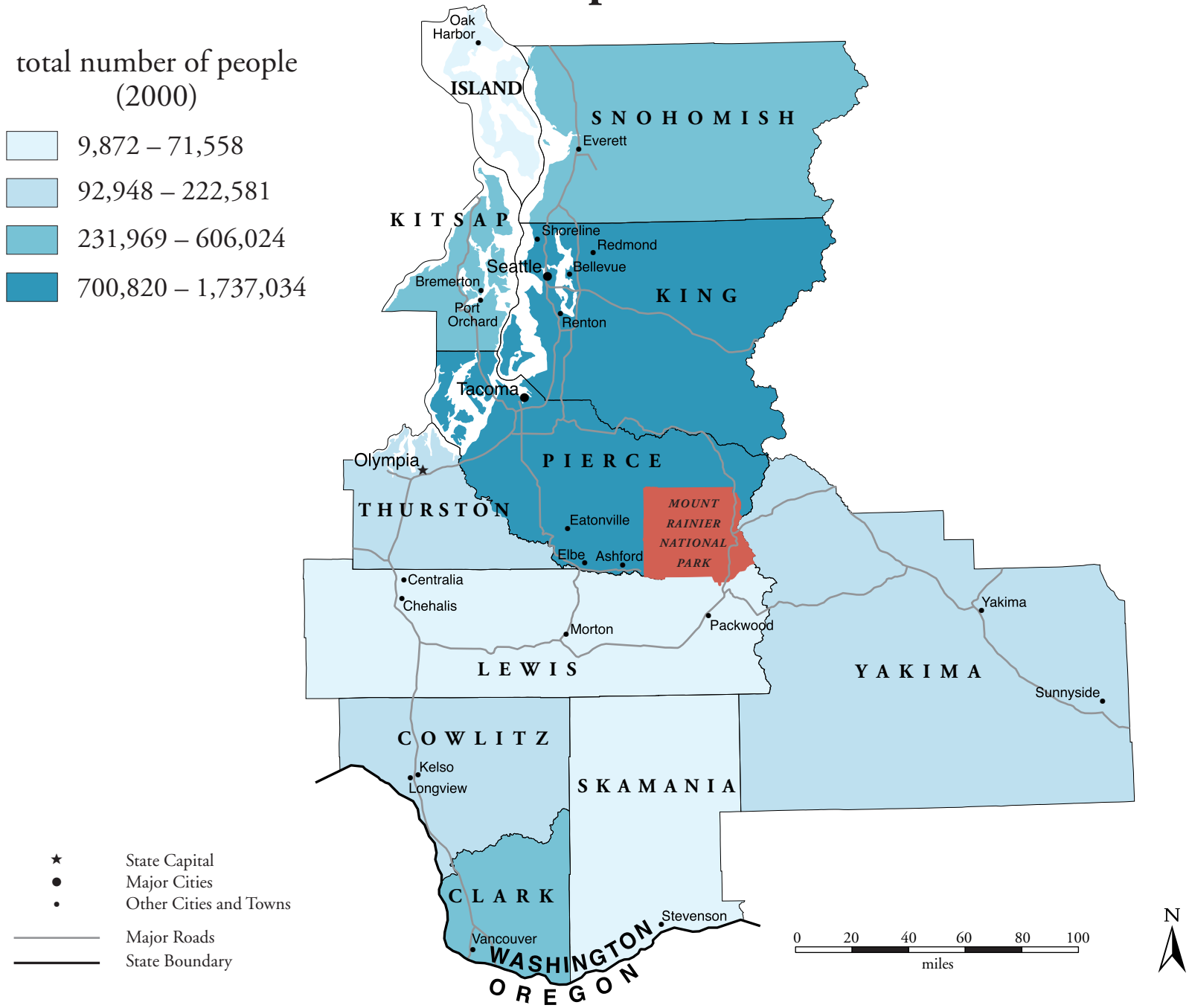
Total Population



Recent Population Change

Measuring recent population change provides an indication of the extent to which population change is influencing current local or regional priorities. For example, population growth changes the tax base, adds new voters, and can increase demand for services ranging from schools to transportation to outdoor recreation. Within the Mount Rainier NP region, the recent increase in county population (1990-2000) ranges from 13.2% (Cowlitz) to 45% (Clark).

Number Line
showing distribution of data

% change in total number of people (1990-2000)

Clark	45.0
Snohomish	30.2
Thurston	28.6
Kitsap	22.3
Pierce	19.6
Skamania	**19.1**
Island	18.9
Yakima	17.9
Lewis	15.6
King	15.2
Cowlitz	13.2

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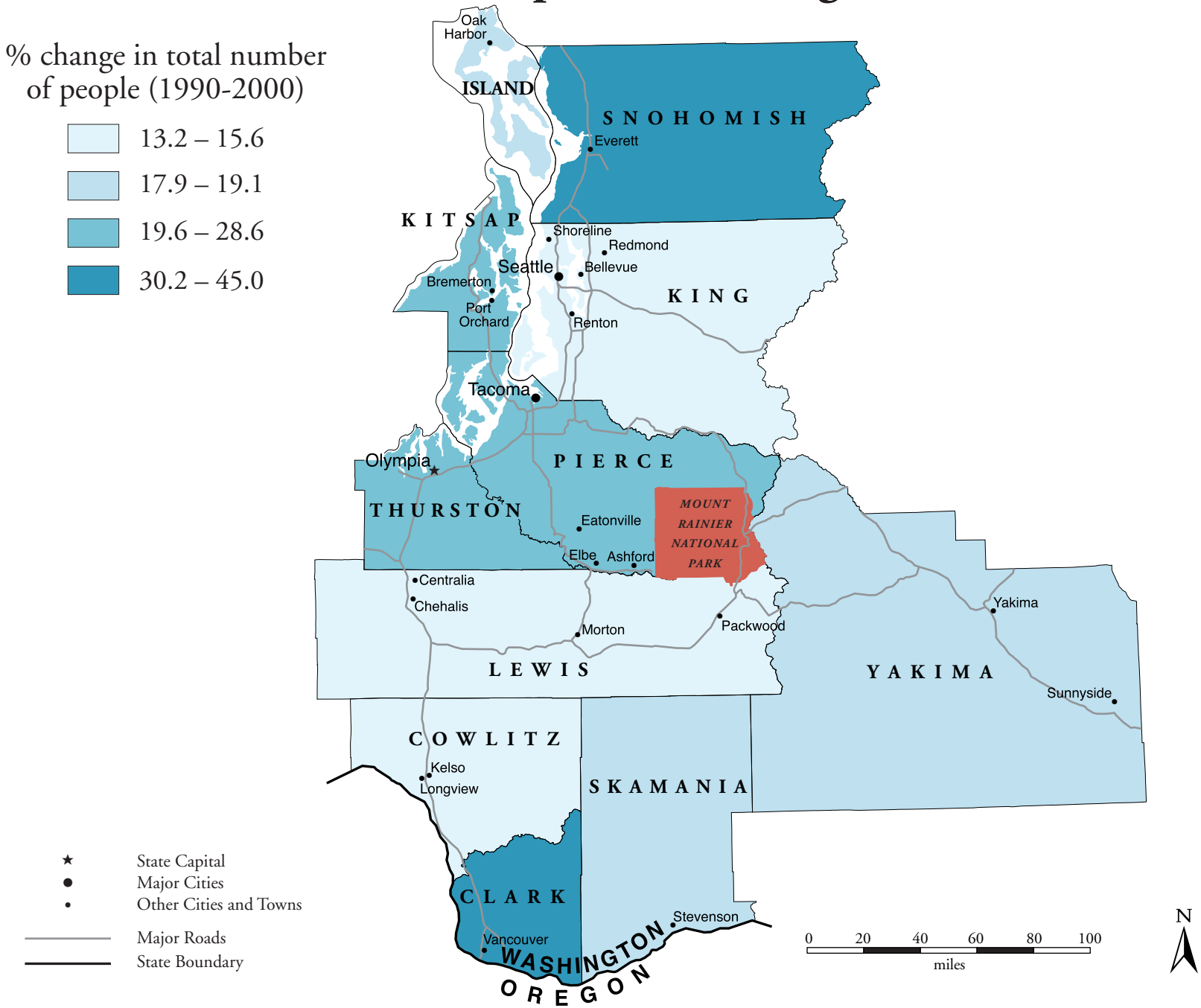
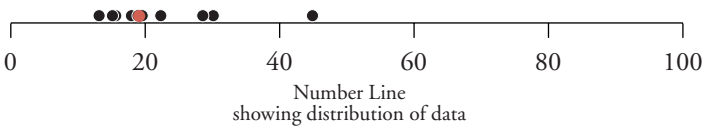
Recent Population Change



Projected Population Change

Population projections can be made with some accuracy for short and mid-range time spans. Projections can help planners anticipate potential impacts on park resources. For example, population growth can generate changes in land use and transportation, growth of new and existing communities, and increases in the demand for park experiences. Within the Mount Rainier NP region, the projected increase in county population by the year 2020 ranges from 20.9% (King) to 55.6% (Clark).



Number Line
showing distribution of data

projected % change in total number of people (1998-2020)

Clark	55.6
Island	49.0
Snohomish	48.3
Pierce	44.8
Thurston	41.9
Kitsap	**35.4**
Lewis	26.2
Skamania	25.2
Cowlitz	23.2
Yakima	21.6
King	20.9

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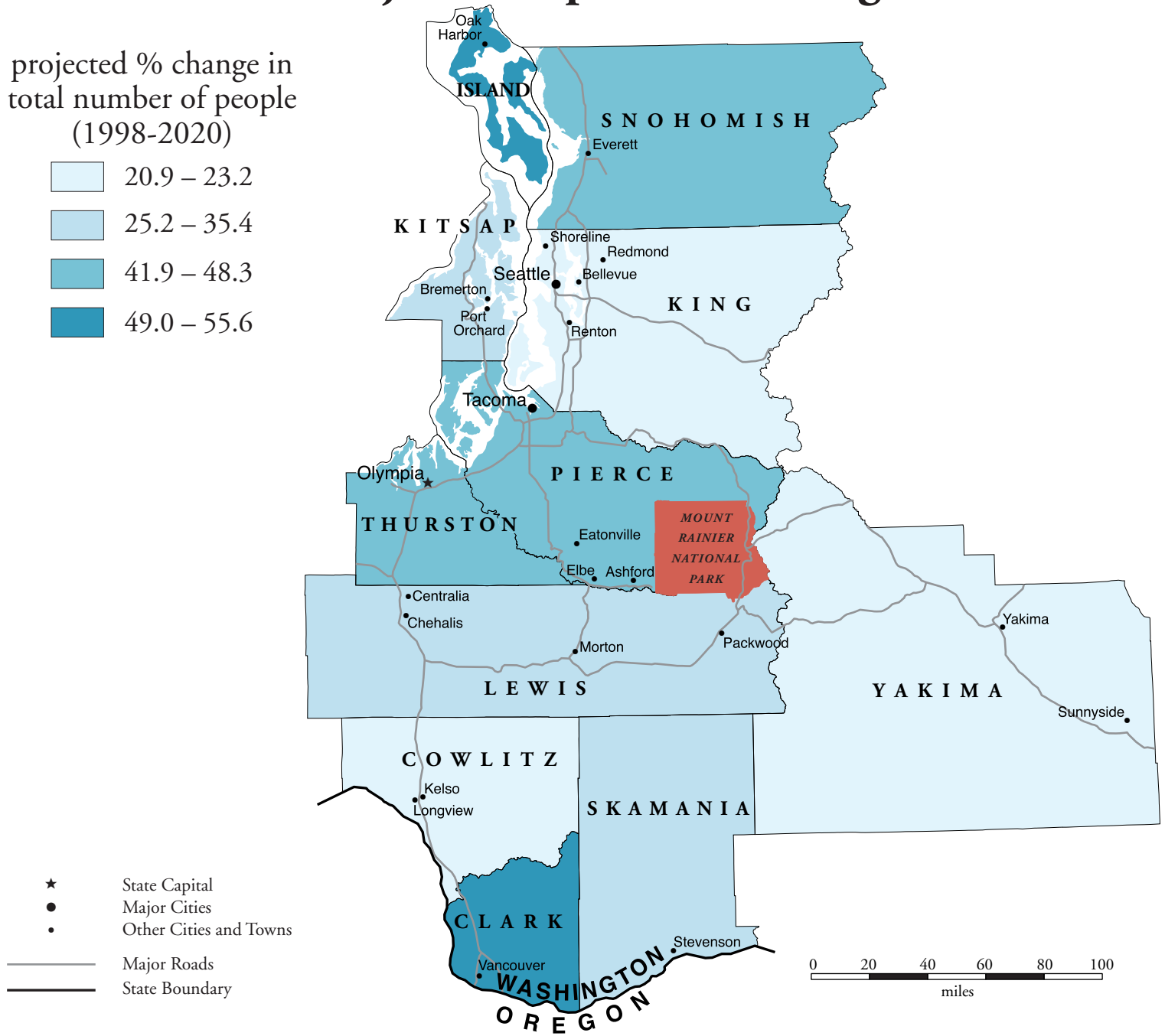
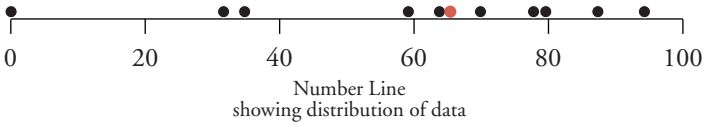
Projected Population Change



Urban Population

The relative percentage of urban dwellers within counties in the park region can be significant in addressing regional issues related to park management. Urban dwellers may have easier access to schools, stores, and medical service. They may also benefit from a greater array of public services such as water utilities and municipal police protection. These and many other differences can tend to generate varying urban and rural strategies for dealing with issues such as taxation, development, and environmental protection. Within the Mount Rainier NP region, the percentage of the county population living in urban areas (1990) ranges from 0% (Skamania) to 94.2% (King).[1]

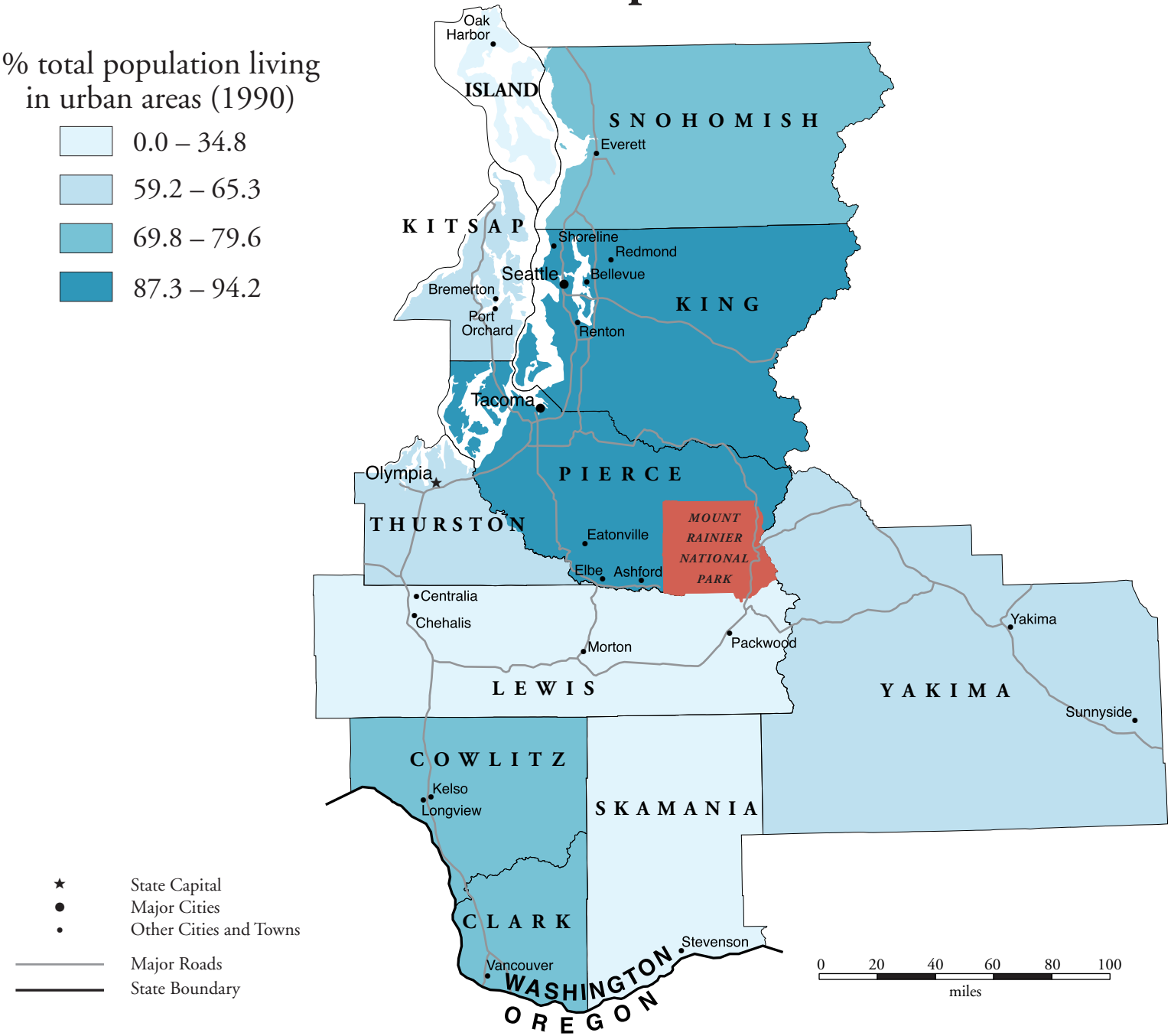


Number Line
showing distribution of data

% total population living in urban areas (1990)	
King	94.2
Pierce	87.3
Snohomish	79.6
Clark	77.7
Cowlitz	69.8
Kitsap	**65.3**
Yakima	63.8
Thurston	59.2
Island	34.8
Lewis	31.7
Skamania	0.0

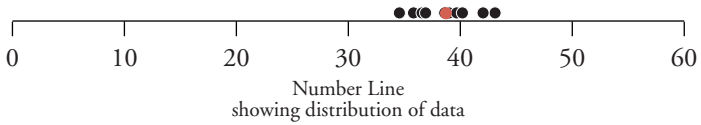
NOTES

Urban Population



Projected Median Age

Median age expresses the age of a "typical" county resident for whom half the population is older and half is younger. Just as age is an important influence on individual behavior, the median age of a county's population can influence its character in many ways. For example, a relatively young county population might place a higher priority on schools, while a relatively old county population might place a higher priority on health care. Within the Mount Rainier NP region, projections for median age in the year 2020 range from 34.6 (Yakima) to 43.1 (Lewis).



Number Line
showing distribution of data

projected median age of total population (2020)

Lewis	43.1
Cowlitz	42.0
Skamania	40.2
Thurston	39.7
Clark	39.0
King	**38.7**
Island	38.6
Kitsap	36.9
Snohomish	36.6
Pierce	35.8
Yakima	34.6

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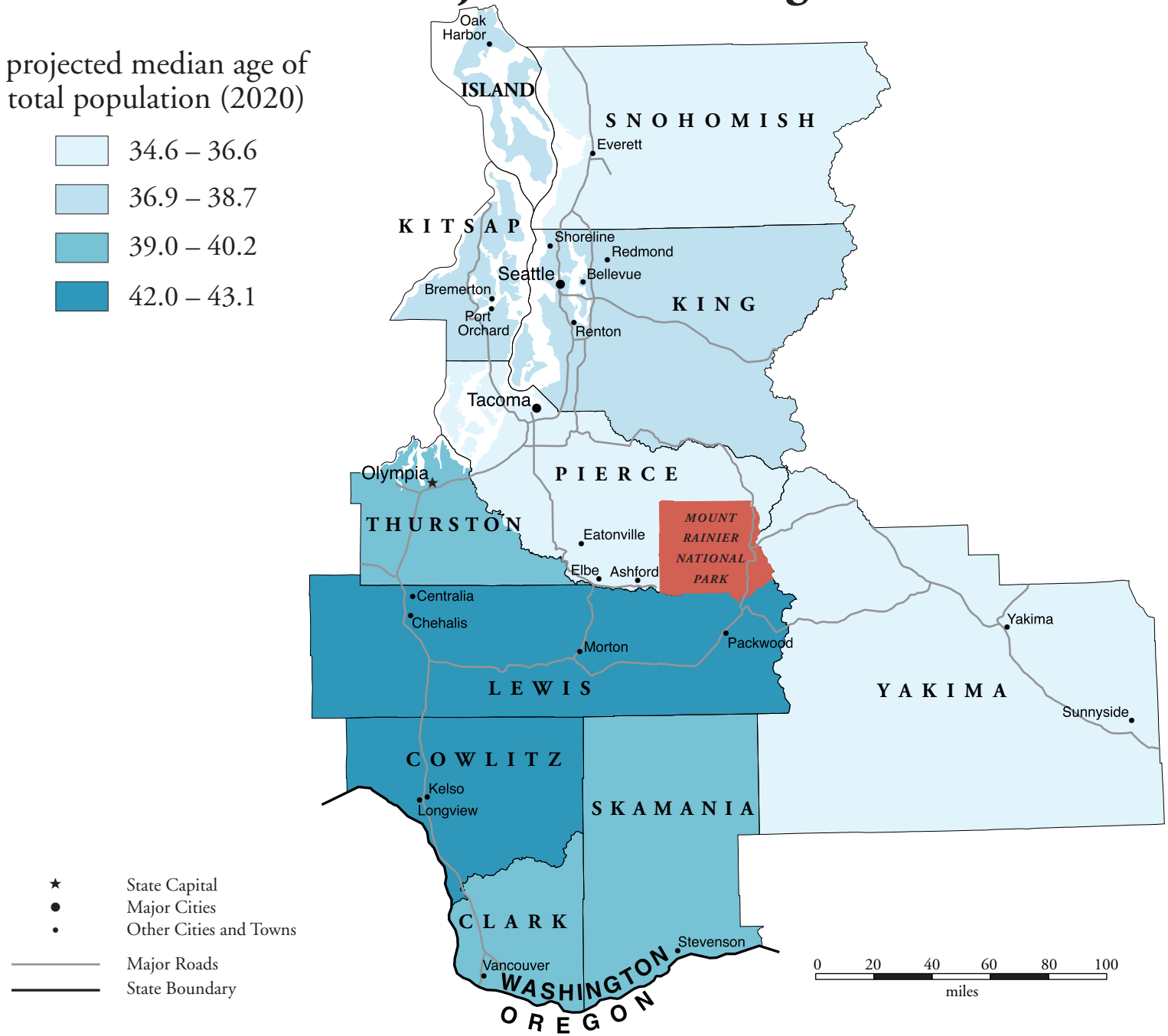
Projected Median Age



Projected Elderly Population

The size of a county's elderly population is measured as the percentage of its residents who are 65 years old and over. A variety of factors can lead to increases in the population of elderly residents, including increased longevity due to changes in health care, out-migration by younger people for employment or education, or in-migration by retirees. In counties with a higher projected percentage of older people, there may be increased demands for health care and recreational activities more suited to the elderly. There may also be a net flow of dollars into the local economy in the form of medical, retirement, and disability payments. Aspects of civic life ranging from volunteerism to political participation may also be influenced by the size of the elderly population. The needs and interests of the regional elderly population can influence park management in many ways, including facility design, interpretive programs, volunteer recruitment, and visitor use schedules and preferences. Within the Mount Rainier NP region, the projected percentage of county residents 65 years old and over (2020) ranges from 13.5% (Snohomish) to 22.2% (Lewis).

projected % total population ≥ 65 years old (2020)	
Lewis	22.2
Skamania	20.1
Island	20.1
Cowlitz	20.0
Thurston	17.5
Clark	**16.5**
King	14.9
Kitsap	14.8
Yakima	14.7
Pierce	14.0
Snohomish	13.5

Number Line
showing distribution of data

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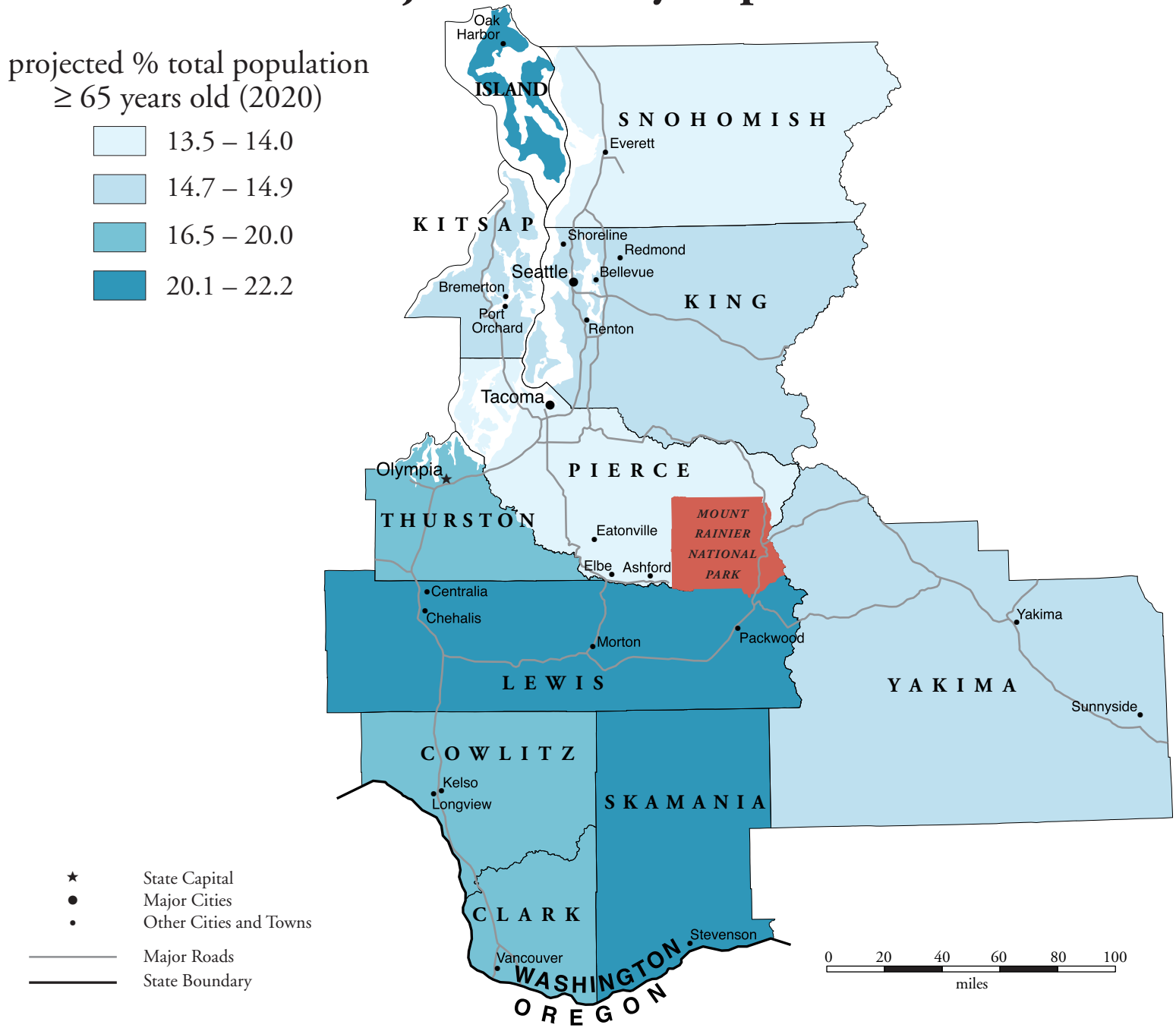
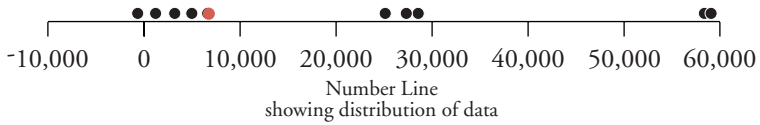
Projected Elderly Population



Domestic Migration

Domestic migration measures the net movement of U.S. residents into or out of a county. These indicators provide a way of monitoring whether a county is attracting new residents or losing current residents. Factors that can encourage migration into a county include new industry, recreation or retirement offerings, and suburban development. Domestic migration into the park region can have significant impacts for park management, such as increased visitor use, development pressure on adjacent lands, and new challenges for protecting thematically-related cultural landmarks or natural resources in the park region. Within the Mount Rainier NP region (1990-1997), ten of the eleven counties experienced net in-migration, with a range of a loss of 148 people (Yakima) to a gain of 58,942 people (Snohomish).[2]



Number Line
showing distribution of data

net number of non-foreign migrants (1990-1997)

Snohomish	58,942
Clark	58,285
Thurston	28,473
Pierce	27,272
Kitsap	25,032
King	**6,653**
Lewis	6,504
Cowlitz	4,903
Island	3,116
Skamania	1,116
Yakima	-148

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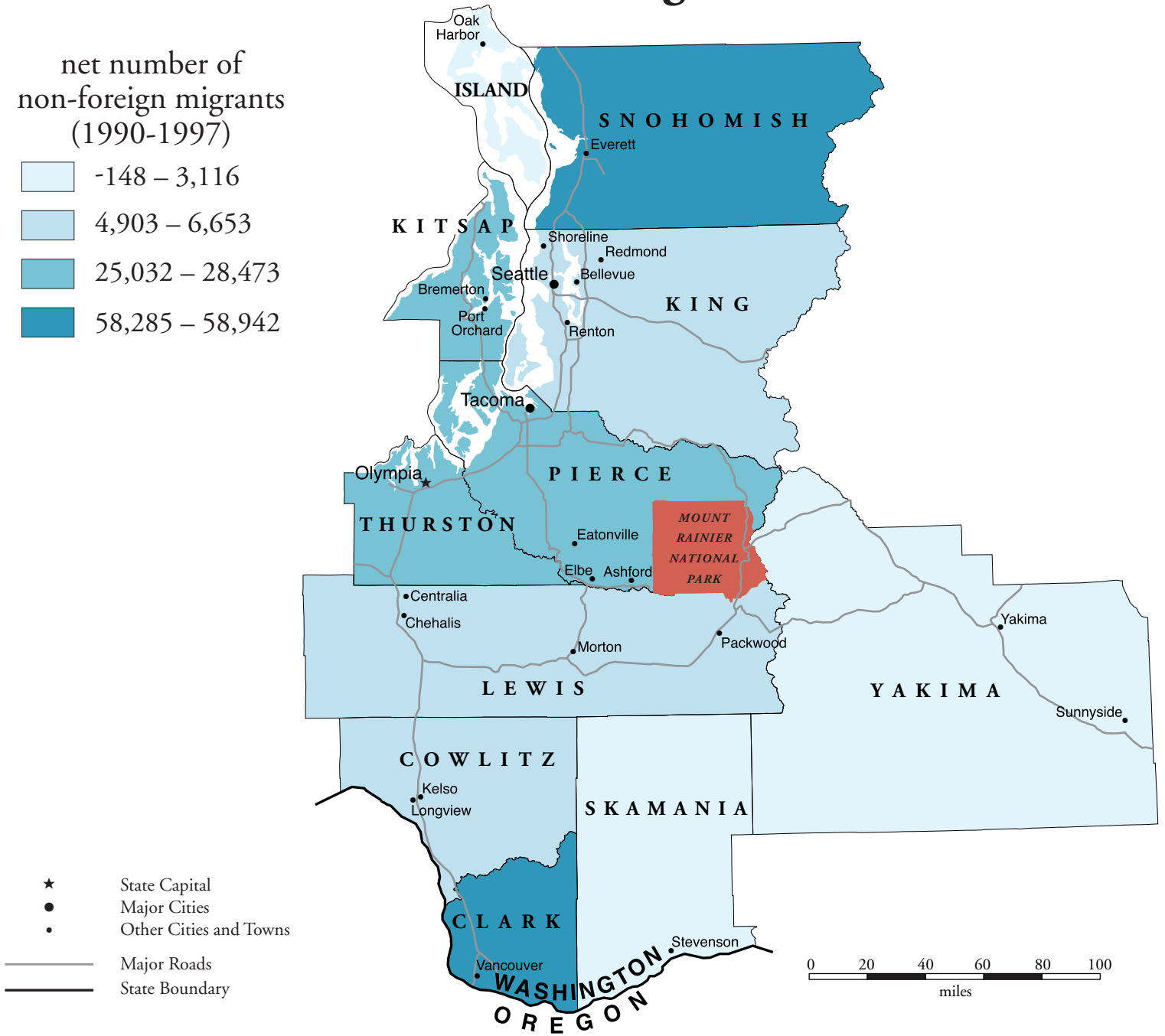
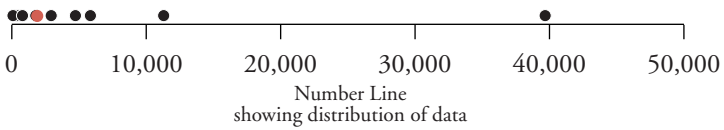
Domestic Migration



International Migration

International migration indicators measure the net movement of immigrants into or out of a county. Such migration can have impacts on park management similar to domestic migration, with the addition of possible cultural and language barriers. Factors that can contribute to an increased number of immigrants within a county, are a strong economy or an established community of immigrants. Within the Mount Rainier NP region (1990-1997), all counties experienced net in-migration, with gains ranging from 31 people (Skamania) to 39,702 people (King).[3]

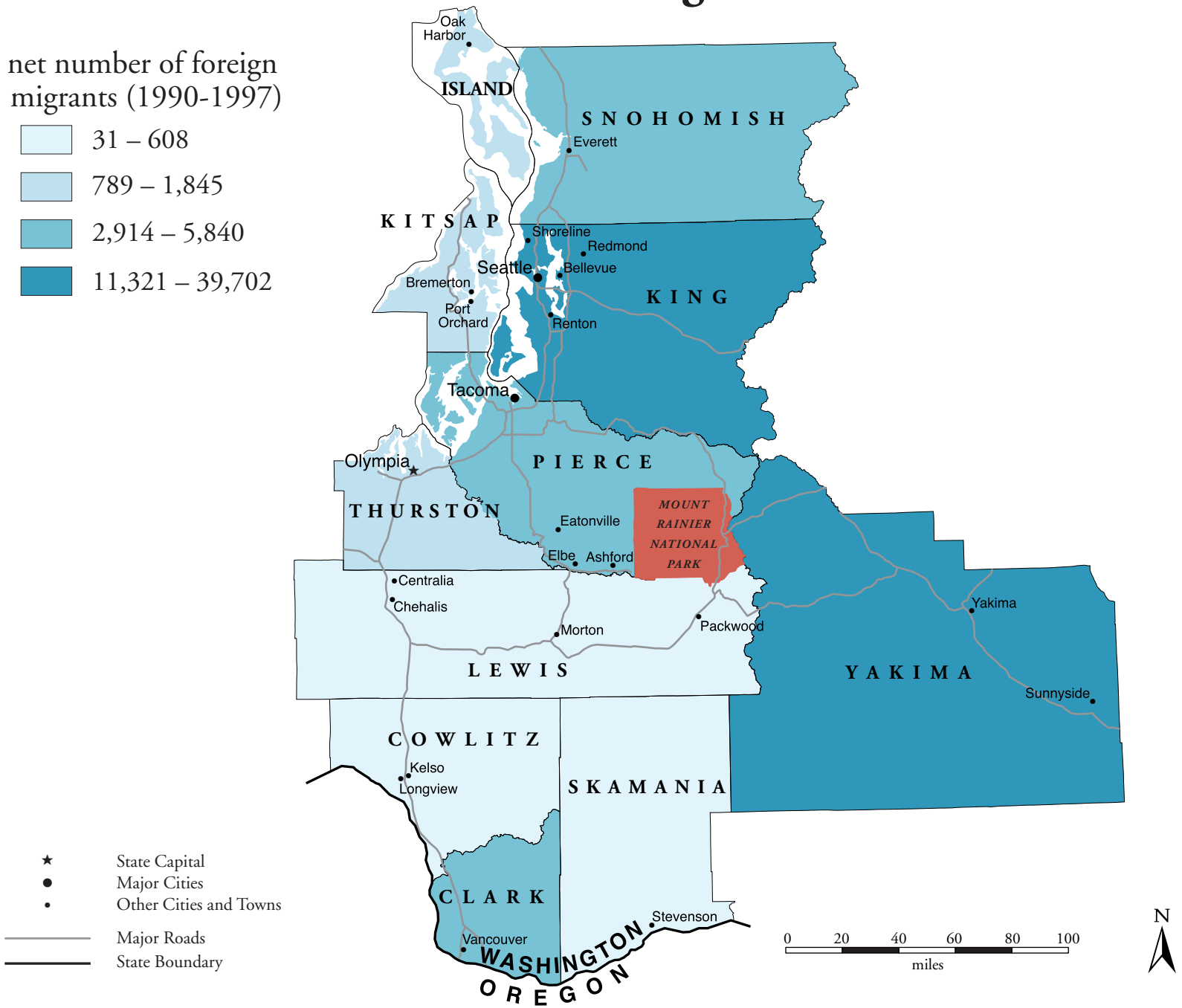


Number Line
showing distribution of data

net number of foreign migrants (1990-1997)	
King	39,702
Yakima	11,321
Snohomish	5,840
Pierce	4,750
Clark	2,914
Kitsap	**1,845**
Thurston	1,774
Island	789
Cowlitz	608
Lewis	380
Skamania	31

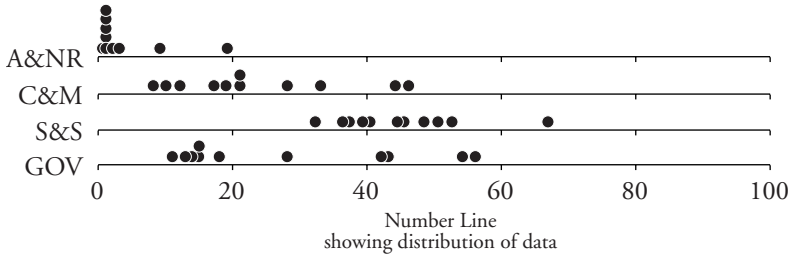
NOTES

International Migration



Industry Earnings

Industry earnings are indicative of the overall size of a local economy as well as the relative importance of each major industrial sector within that economy. The diversity of economic activities in the region presents an array of challenges to park management. For example, relatively mobile industries such as light manufacturing or financial services may be concerned with land costs and tax rates, whereas natural resource dependent industries such as farming or mining may be concerned with land use regulations and other environmental policies. Within the Mount Rainier NP region (1996), the leading sector of earnings in six of the eleven counties is sales and services. In Island, Kitsap, and Skamania counties, the leading sector is government. In the two remaining counties, Cowlitz and Snohomish, the leading sector is construction and manufacturing.[4]



% total earnings by industrial category (1996)

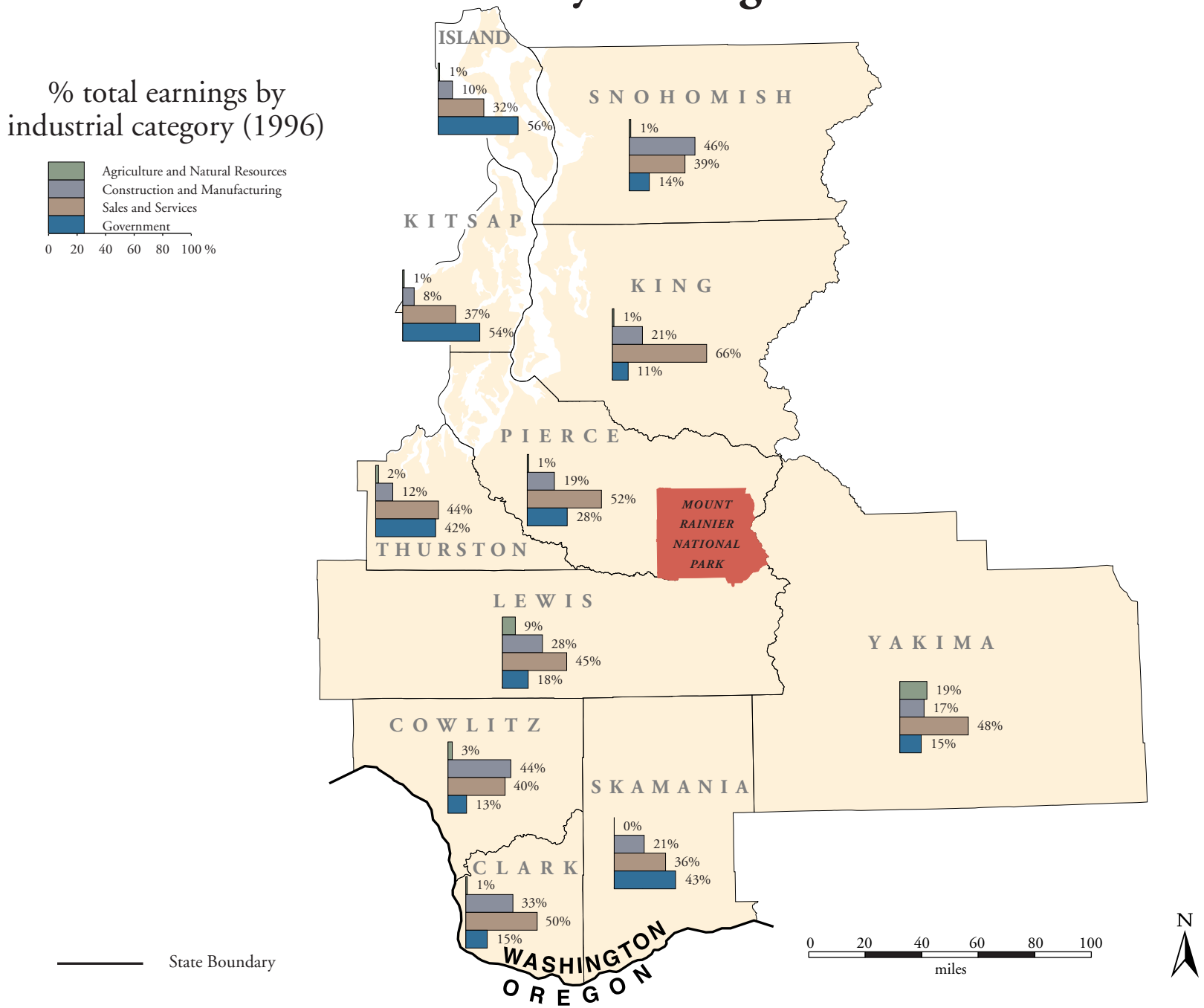
	A&NR	C&M	S&S	GOV
Clark	1	33	50	15
Cowlitz	3	44	40	13
Island	1	10	32	56
King	1	21	66	11
Kitsap	1	8	37	54
Lewis	9	28	45	18
Pierce	1	19	52	28
Skamania	0	21	36	43
Snohomish	1	46	39	14
Thurston	2	12	44	42
Yakima	19	17	48	15

A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

Percentages may not add to one hundred due to rounding.

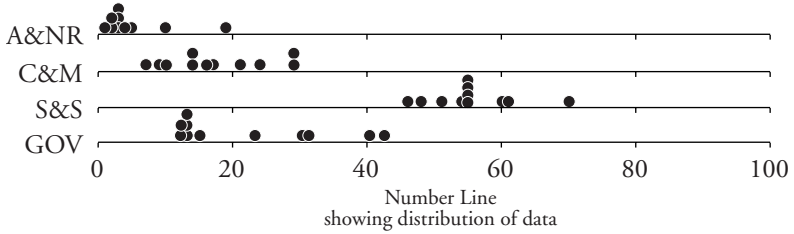
NOTES

Industry Earnings



Employment by Industry

One indicator of the way a particular county's job market is structured is the percentage of workers employed in each of the four major industrial sectors. This employment distribution is indicative of the kinds of skills, knowledge, and concerns that are most prevalent among workers. Occupational patterns can influence people's priorities and actions with regard to parks and resource protection. For example, construction workers might welcome the prospect of rapid growth, whereas government workers such as teachers and police might worry that rapid growth would stress existing government resources. Within the Mount Rainier NP region (1996), the leading sector of employment in every county is sales/services. The second-ranking sector varies from county to county.[5]



% employment by industrial category (1996)

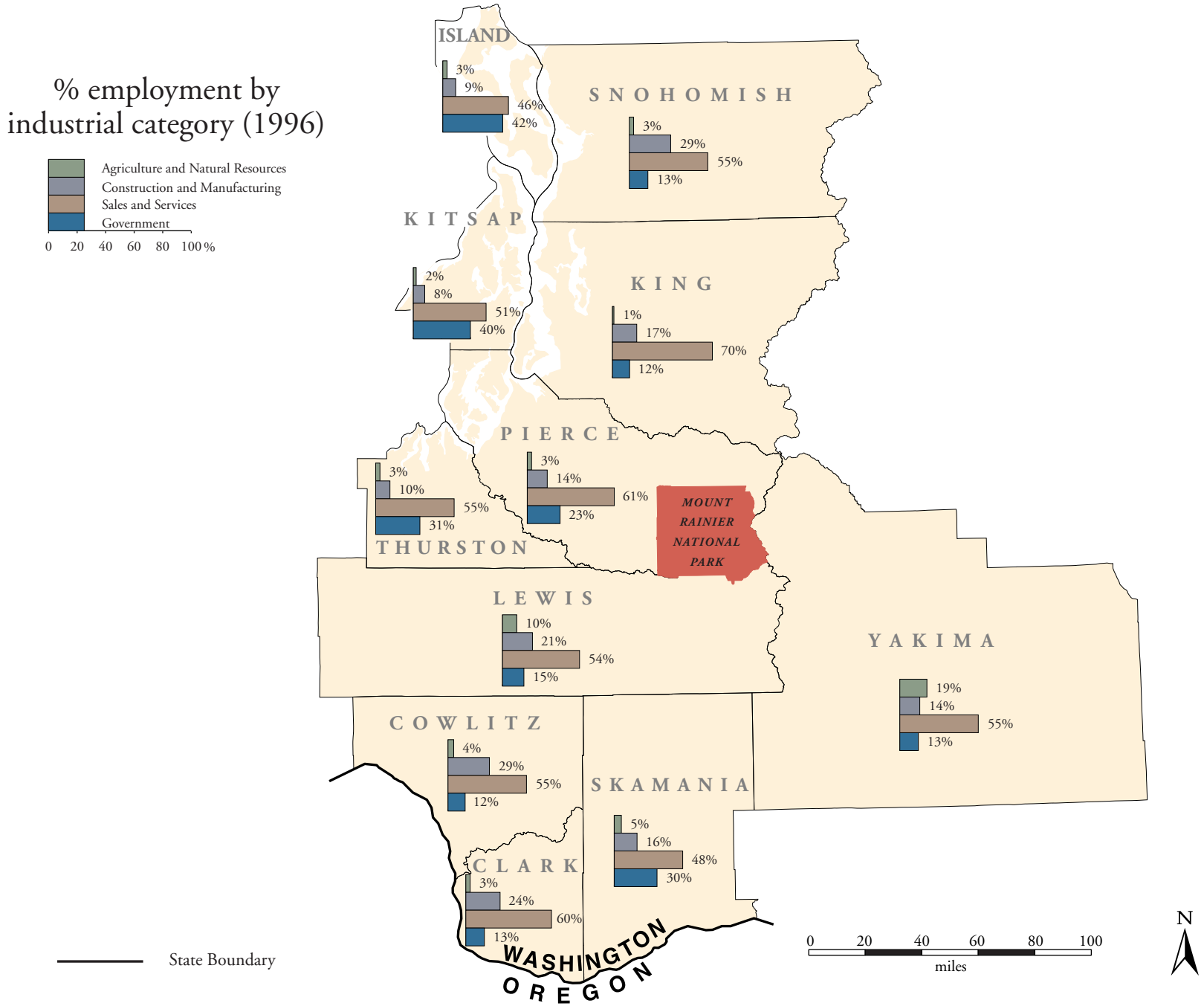
	A&NR	C&M	S&S	GOV
Clark	3	24	60	13
Cowlitz	4	29	55	12
Island	3	9	46	42
King	1	17	70	12
Kitsap	2	7	51	40
Lewis	10	21	54	15
Pierce	2	14	61	23
Skamania	5	16	48	30
Snohomish	3	29	55	13
Thurston	3	10	55	31
Yakima	19	14	55	13

A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

Percentages may not add to one hundred due to rounding.

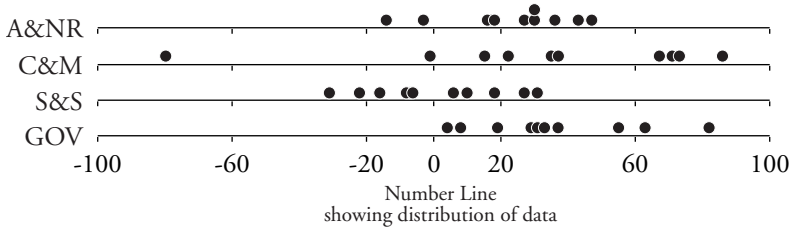
NOTES

Employment by Industry



Change in Employment by Industry

Jobs are of critical importance to individuals, families, and communities. Change in the proportion of people employed by various industries within an economy can create a cascading set of impacts. A declining industry's displacement of workers whose skills are in less demand can generate stress among households and communities. A growing industry's demand for new sets of skills can influence migration patterns and educational priorities. Local and regional political decisions, including those that impact park management goals, often place priority on protecting existing jobs or attracting new employment opportunities. Within the Mount Rainier NP region (1980-1996), counties varied not only in the relative rates of growth for each industry but also in the overall pace of employment growth.[6]



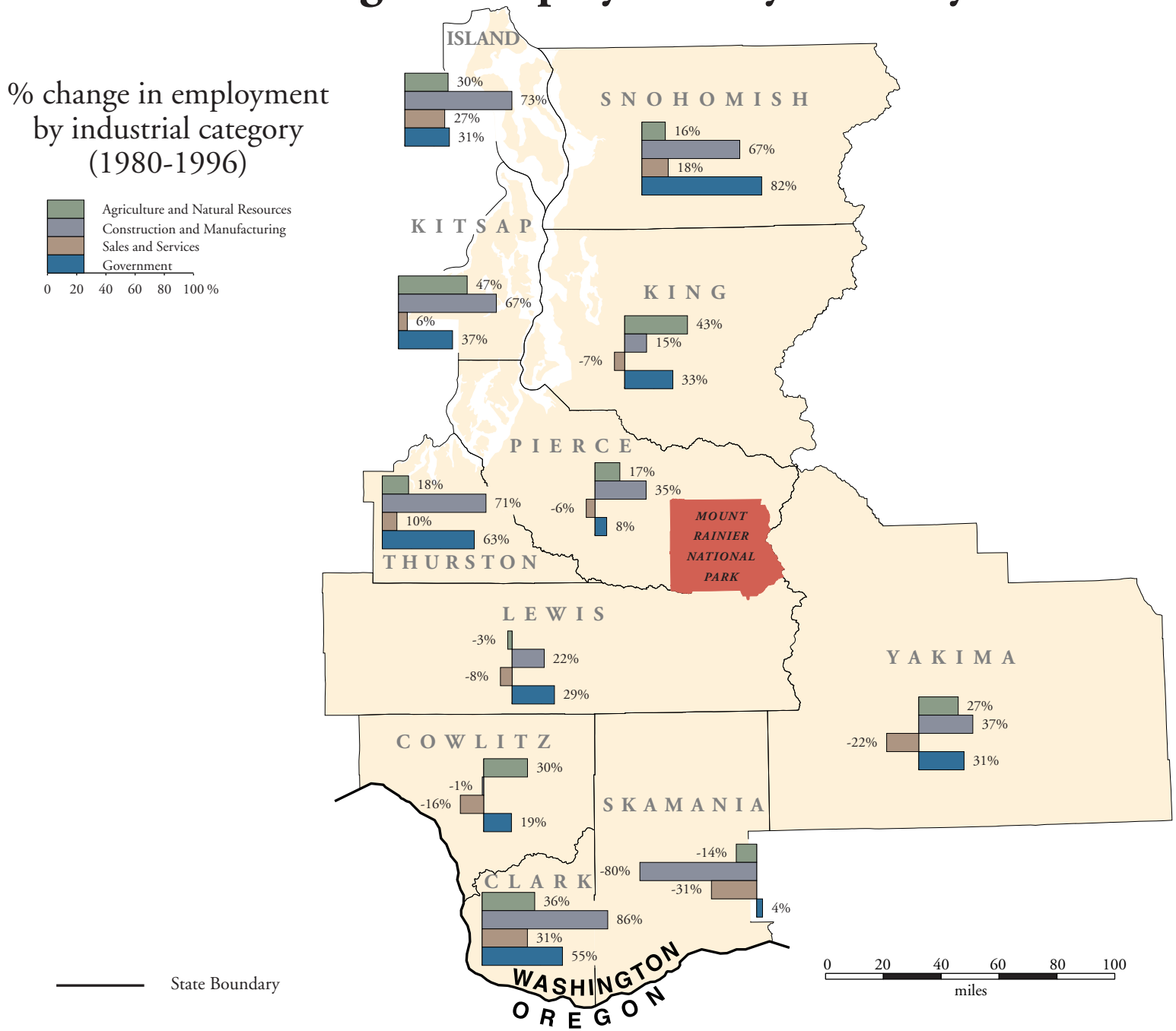
% change in employment by industrial category (1980-1996)

	A&NR	C&M	S&S	GOV
Clark	36	86	31	55
Cowlitz	30	-1	-16	19
Island	30	73	27	31
King	43	15	-7	33
Kitsap	47	67	6	37
Lewis	-3	22	-8	29
Pierce	17	35	-6	8
Skamania	-14	-80	-31	4
Snohomish	16	67	18	82
Thurston	18	71	10	63
Yakima	27	37	-22	31

A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

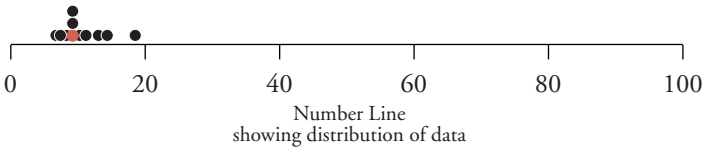
NOTES

Change in Employment by Industry



Poverty

Poverty is officially defined as the condition of living in a household with income below the federally-determined poverty threshold ($16,400 in 1997). The extent of poverty can be measured as the percentage of the total population living below that threshold. Those living in poverty can face such difficulties as finding adequate housing and health care, getting enough food, and reaching job sites and government services, including parks. The level of poverty in the park region necessarily becomes significant to park management decisions and priorities. Within the Mount Rainier NP region, the incidence of poverty (1997) ranges from 6.6% (Island) to 18.3% (Yakima).[7]

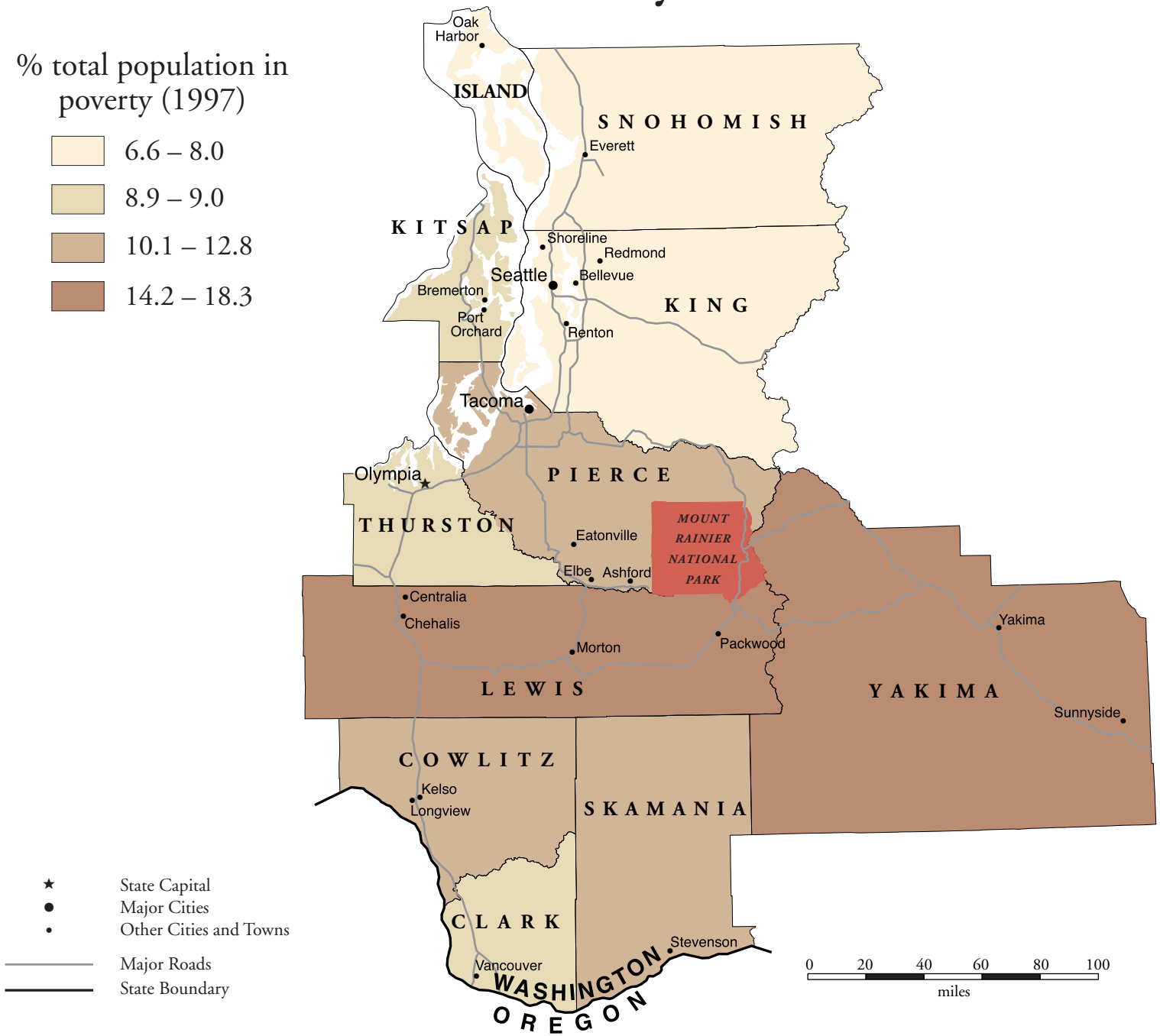


Number Line
showing distribution of data

% total population in poverty (1997)	
Yakima	18.3
Lewis	14.2
Cowlitz	12.8
Pierce	11.0
Skamania	10.1
Clark	**9.0**
Thurston	9.0
Kitsap	8.9
King	8.0
Snohomish	7.2
Island	6.6

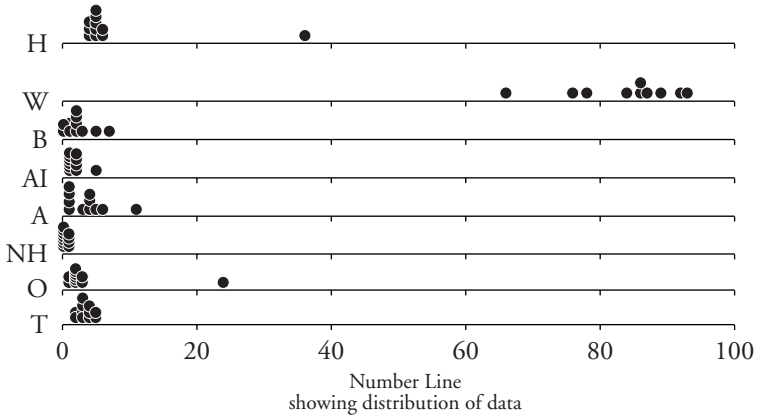
NOTES

Poverty


% total population in poverty (1997)
6.6 – 8.0
8.9 – 9.0
10.1 – 12.8
14.2 – 18.3
Oak Harbor
ISLAND
SNOHOMISH
Everett
KITSAP
Shoreline
Redmond
Seattle
Bellevue
KING
Bremerton
Port Orchard
Renton
Tacoma
Olympia
PIERCE
THURSTON
Eatonville
MOUNT RAINIER NATIONAL PARK
Elbe
Ashford
Centralia
Chehalis
Morton
Packwood
Yakima
LEWIS
YAKIMA
Sunnyside
COWLITZ
Kelso
Longview
SKAMANIA
CLARK
Vancouver
Stevenson
WASHINGTON
OREGON
State Capital
Major Cities
Other Cities and Towns
Major Roads
State Boundary
0 20 40 60 80 100
miles
N

Racial Composition

Race/ethnicity indicators express the size of each race/ethnicity group in a given geographic area. Racial composition can be indicated in broad terms by measuring the relative size of each of the major racial groups and separate ethnicity category as classified by the U.S. Census Bureau. In a diverse society, racial composition can have many impacts. Within the Mount Rainier NP region (2000), Whites constitute the largest racial group in all counties. Yakima County has the largest percentage of persons of Hispanic or Latino origin.[8]



% total population in each of the following racial/ethnic categories (2000)

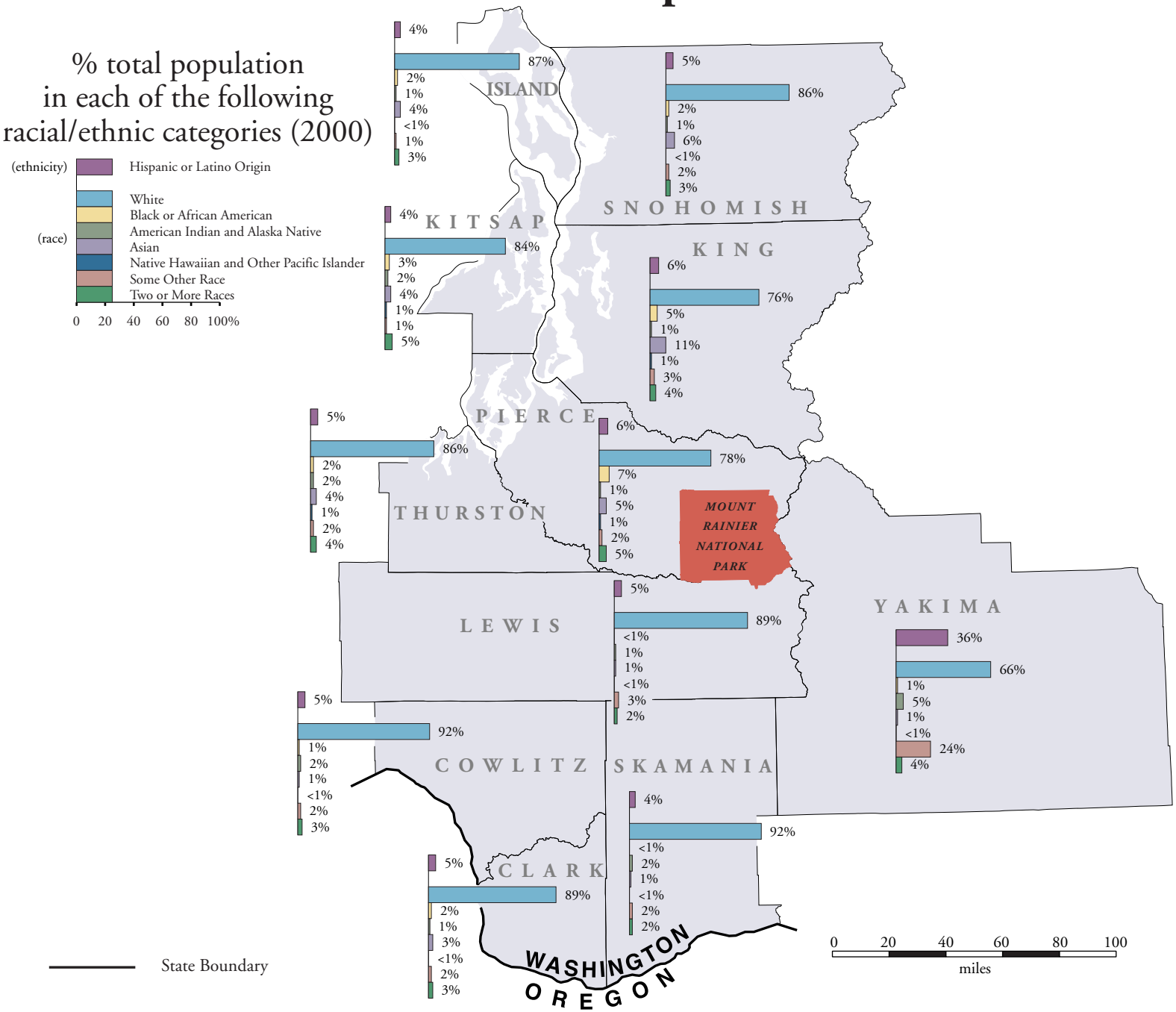
	H	W	B	AI	A	NH	O	T
Clark	5	89	2	1	3	0	2	3
Cowlitz	5	92	1	2	1	0	2	3
Island	4	87	2	1	4	0	1	3
King	6	76	5	1	11	1	3	4
Kitsap	4	84	3	2	4	1	1	5
Lewis	5	93	0	1	1	0	3	2
Pierce	6	78	7	1	5	1	2	5
Skamania	4	92	0	2	1	0	2	2
Snohomish	5	86	2	1	6	0	2	3
Thurston	5	86	2	2	4	1	2	4
Yakima	36	66	1	5	1	0	24	4

H = Hispanic or Latino Origin
W = White
B = Black or African American
AI = American Indian or Alaska Native
A = Asian
NH = Native Hawaiian or Other Pacific Islander
O = Some Other Race
T = Two or More Races

Percentages for race may not add to one hundred due to rounding.

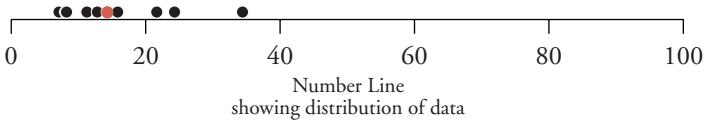
NOTES

Racial Composition



Racial Diversity

Racial diversity is measured as the percentage of the population who identify themselves as belonging to minorities. In the current U.S. context, "minority" is defined as non-White (Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, and Two or More Races). Interactions among people are often influenced by racial identity. Hence, it makes sense for institutions ranging from retailers to police to parks to consider regional racial diversity when recruiting and training staff, when designing public information and educational materials, and when soliciting public involvement in decision-making. Within the Mount Rainier NP region, the percentage of minorities (2000) ranges from 7% (Lewis) to 34.4% (Yakima).[9]



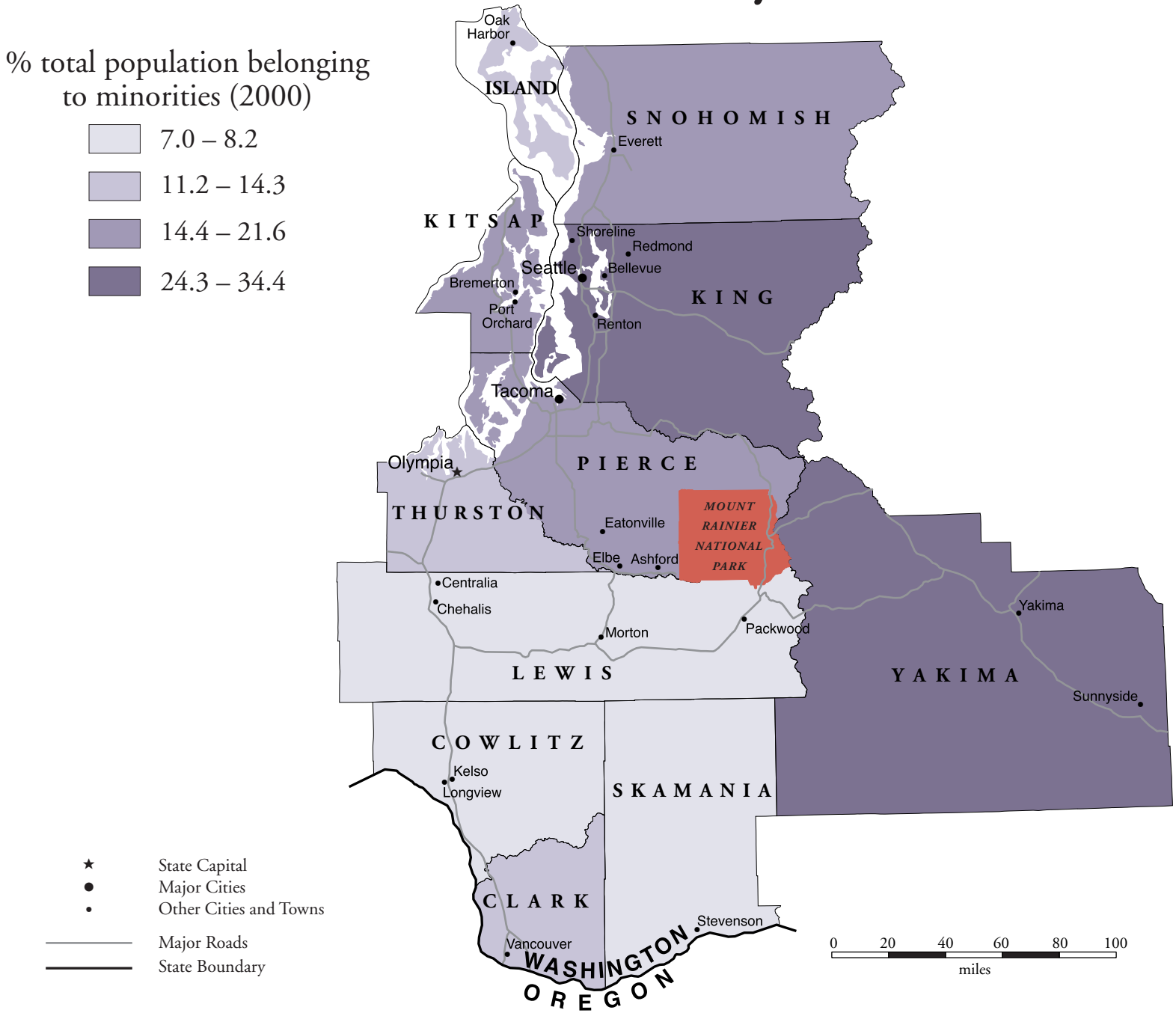
Number Line
showing distribution of data

% total population belonging to minorities (2000)

Yakima	34.4
King	24.3
Pierce	21.6
Kitsap	15.7
Snohomish	14.4
Thurston	**14.3**
Island	12.8
Clark	11.2
Cowlitz	8.2
Skamania	7.9
Lewis	7.0

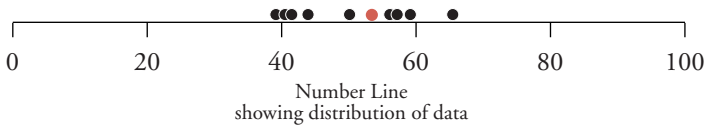
NOTES

Racial Diversity



Educational Attainment

Educational attainment indicators measure the average amount of formal education that a county's residents have received. One indicator of educational attainment is the percentage of adults who have attended or graduated from college. Educational attainment influences many aspects of life, such as how much money people earn, what they do for recreation, where they get their information, and how they participate in civic life. With regard to park management, the educational attainment of the general public is an important consideration in activities, such as marketing, public participation processes, and the design of interpretive programs. Within the Mount Rainier NP region, the percentage of adults with some college education (1990) ranges from 39.1% (Yakima) to 65.4% (King).

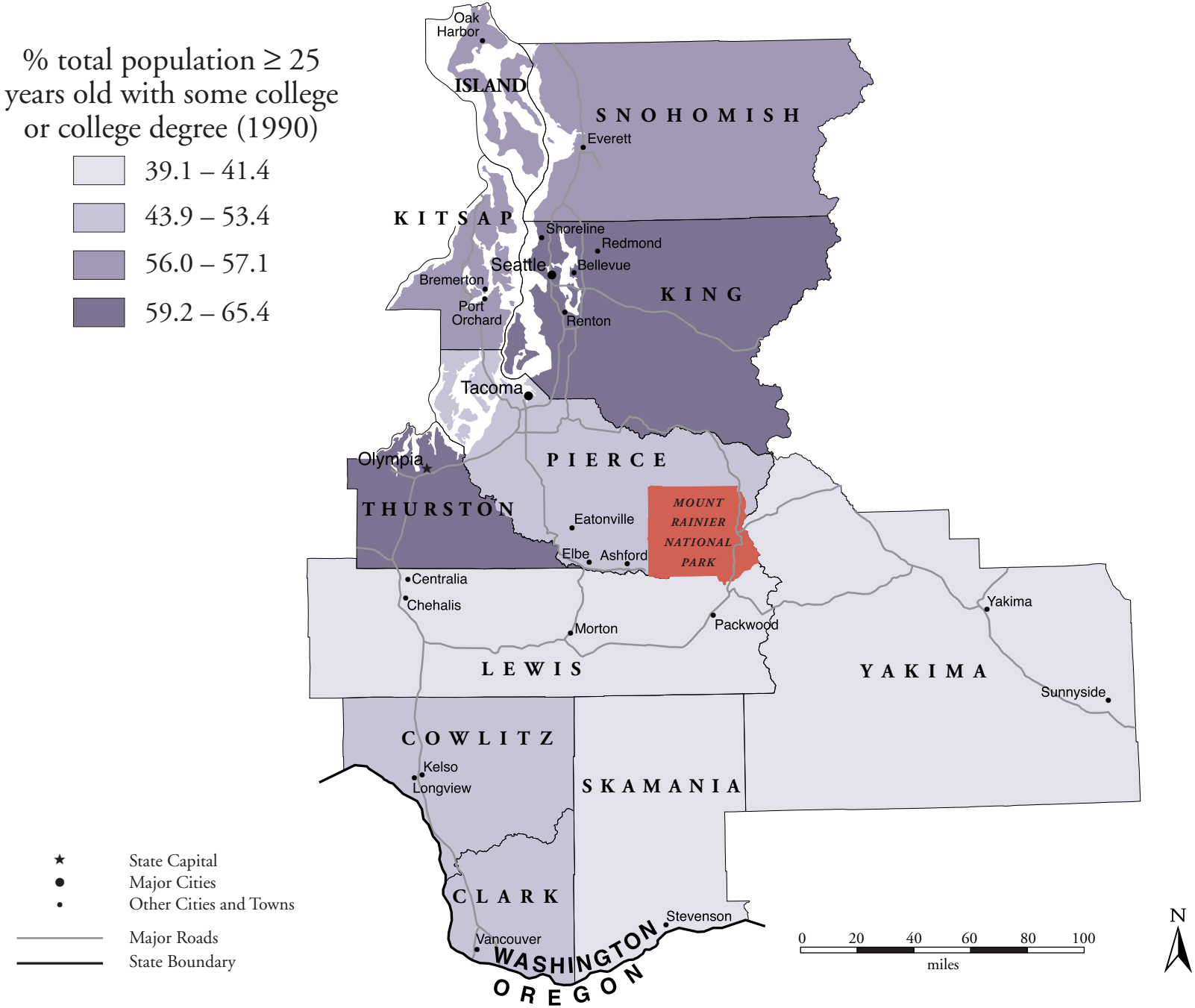


Number Line
showing distribution of data

% total population ≥ 25 years old with some college or college degree (1990)	
King	65.4
Thurston	59.2
Kitsap	57.1
Island	56.7
Snohomish	56.0
Clark	**53.4**
Pierce	50.1
Cowlitz	43.9
Skamania	41.4
Lewis	40.5
Yakima	39.1

NOTES

Educational Attainment



English Language Ability

Indicators of English language ability measure how familiar people in an area are with either spoken or written English. One indicator of English language ability is the percentage of the total county population over age 5 who report that they do not speak English, or do not speak it very well. Knowledge of English can influence people's ability to access basic public information, to obtain services such as education and health care, to gain many types of employment, and to exercise political power. An awareness of the characteristics of the region's non-English speaking community can help park managers design effective public relations, public participation, and interpretive programs. Within the Mount Rainier NP region, the percentage of people lacking in English language ability (1990) ranges from 1.2% (Lewis) to 9.9% (Yakima).

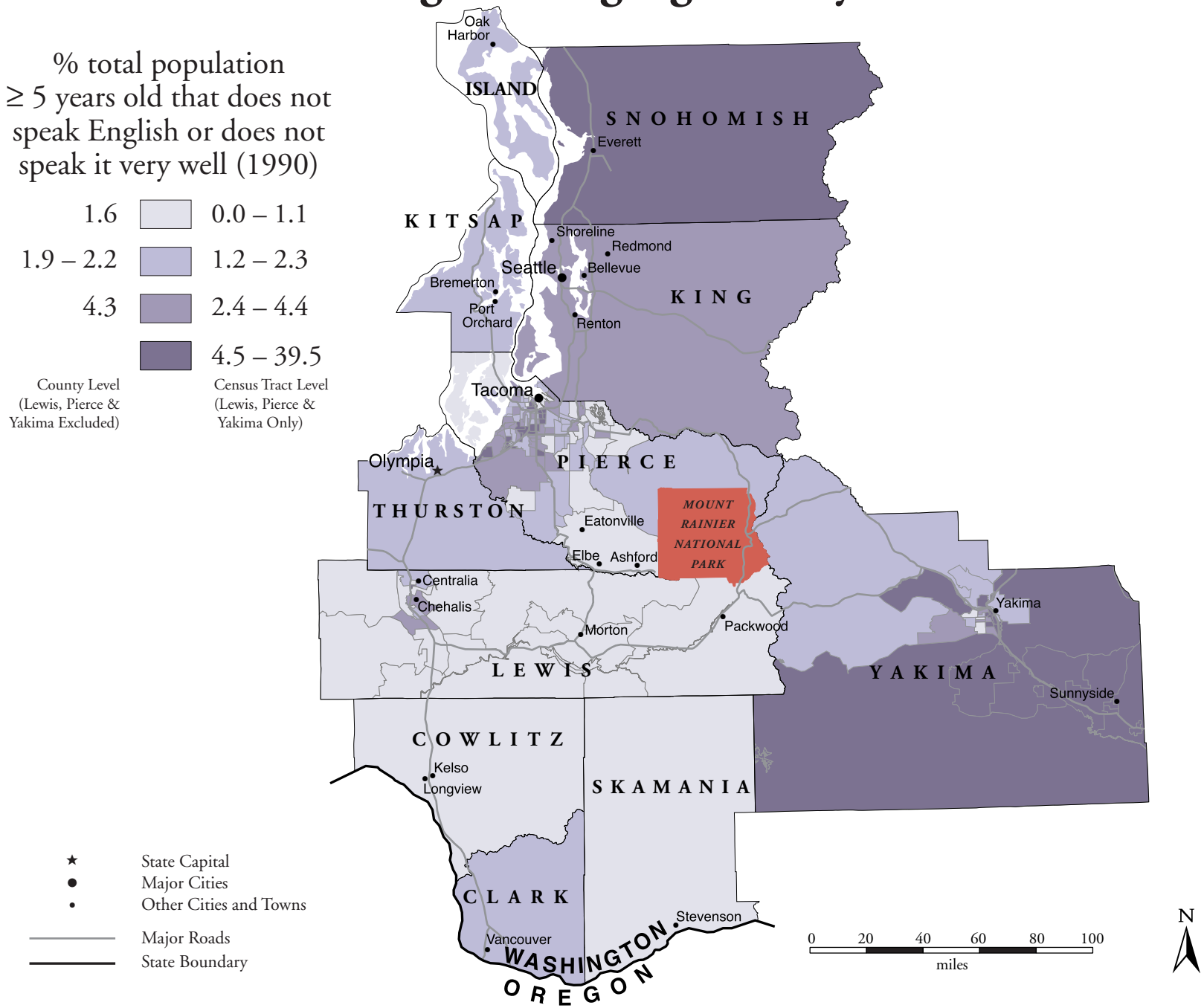
The map displays census tract level data for Lewis, Pierce and Yakima counties only. Census tracts, ranging in number from 1 to 9999, are statistically derived county subdivisions encompassing approximately 4,000 people each.

Number Line
showing distribution of data

% total population ≥ 5 years old that does not speak English or does not speak it very well (1990)	
Yakima	9.9
King	4.3
Pierce	2.9
Snohomish	2.2
Island	2.0
Thurston	**2.0**
Clark	1.9
Kitsap	1.9
Cowlitz	1.6
Skamania	1.6
Lewis	1.2

NOTES

English Language Ability



Spanish Speakers

Indicators of language ability measure proficiency in languages other than English. For example, one indicator of Spanish language ability is the percentage of people 5 years old and over who speak primarily Spanish at home. Awareness of people's primary language (other than English) can help park managers customize information and interpretive programs in a certain language, such as Spanish. Within the Mount Rainier NP region, the percentage of the total population 5 years old and over that speak primarily Spanish at home (1990) ranges from 1.2% (Snohomish) to 17.3% (Yakima).

The map displays census tract level data for Lewis, Pierce and Yakima counties only. Census tracts, ranging in number from 1 to 9999, are statistically derived county subdivisions encompassing approximately 4,000 people each.

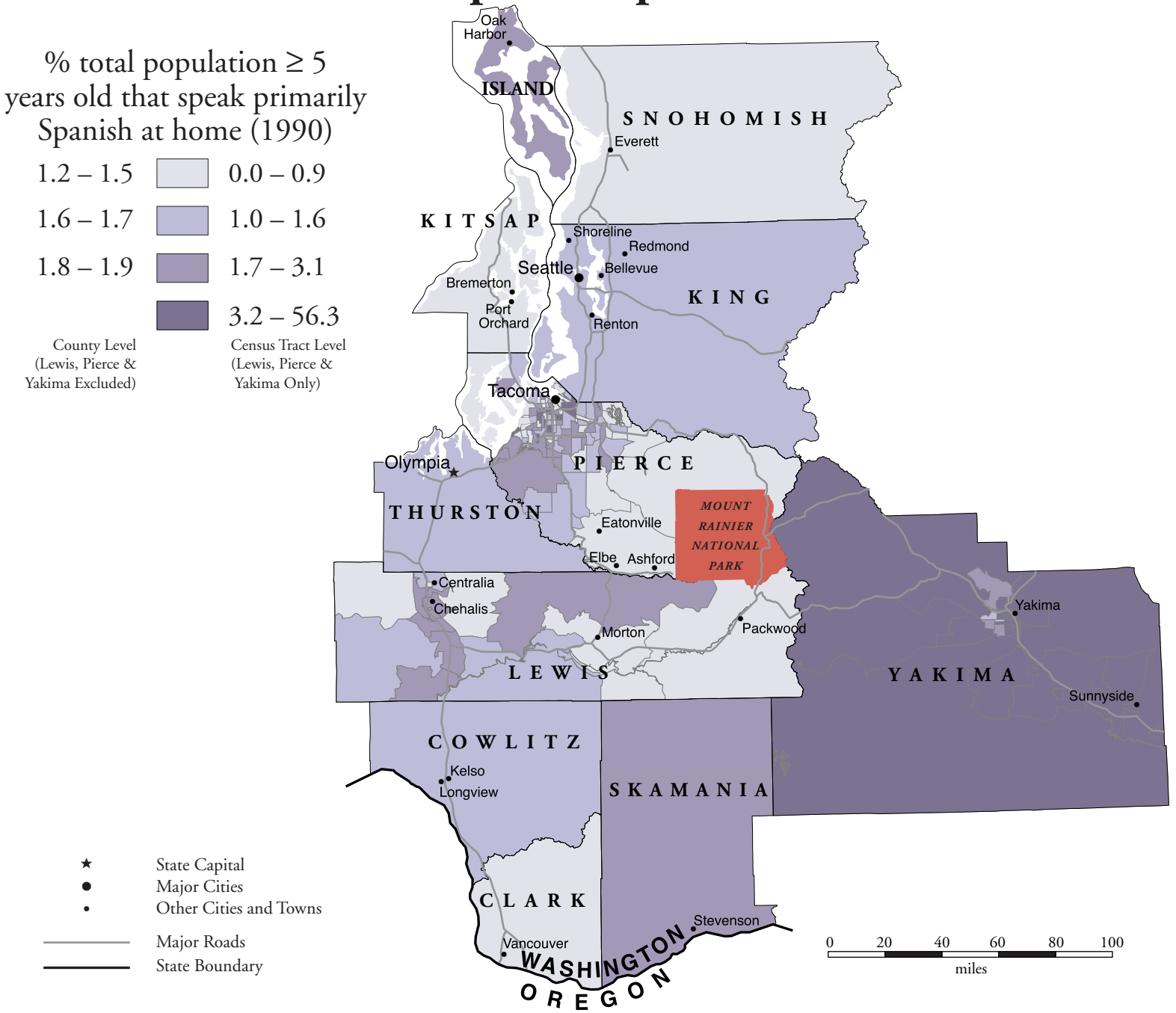
Number Line
showing distribution of data

% total population ≥ 5 years old that speak primarily Spanish at home (1990)

Yakima	17.3
Skamania	1.9
Island	1.8
King	1.7
Cowlitz	1.6
Thurston	**1.6**
Lewis	1.6
Pierce	1.6
Clark	1.5
Kitsap	1.5
Snohomish	1.2

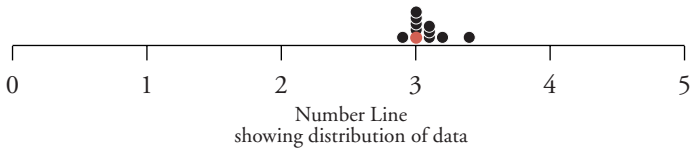
NOTES

Spanish Speakers



Family Size

Family size is a measure of the average number of people in a family. A family is a group of two or more people who reside together and who are related by birth, marriage, or adoption. Families with a large number of people may include children and or relatives of any age. With regard to park management, family size may affect patterns of use within the park and demands on services. It can also be an important consideration in such activities as marketing and the design of interpretive programs. Within the Mount Rainier NP region the average number of persons per family (2000) ranges from 2.9 (Island) to 3.4 (Yakima).



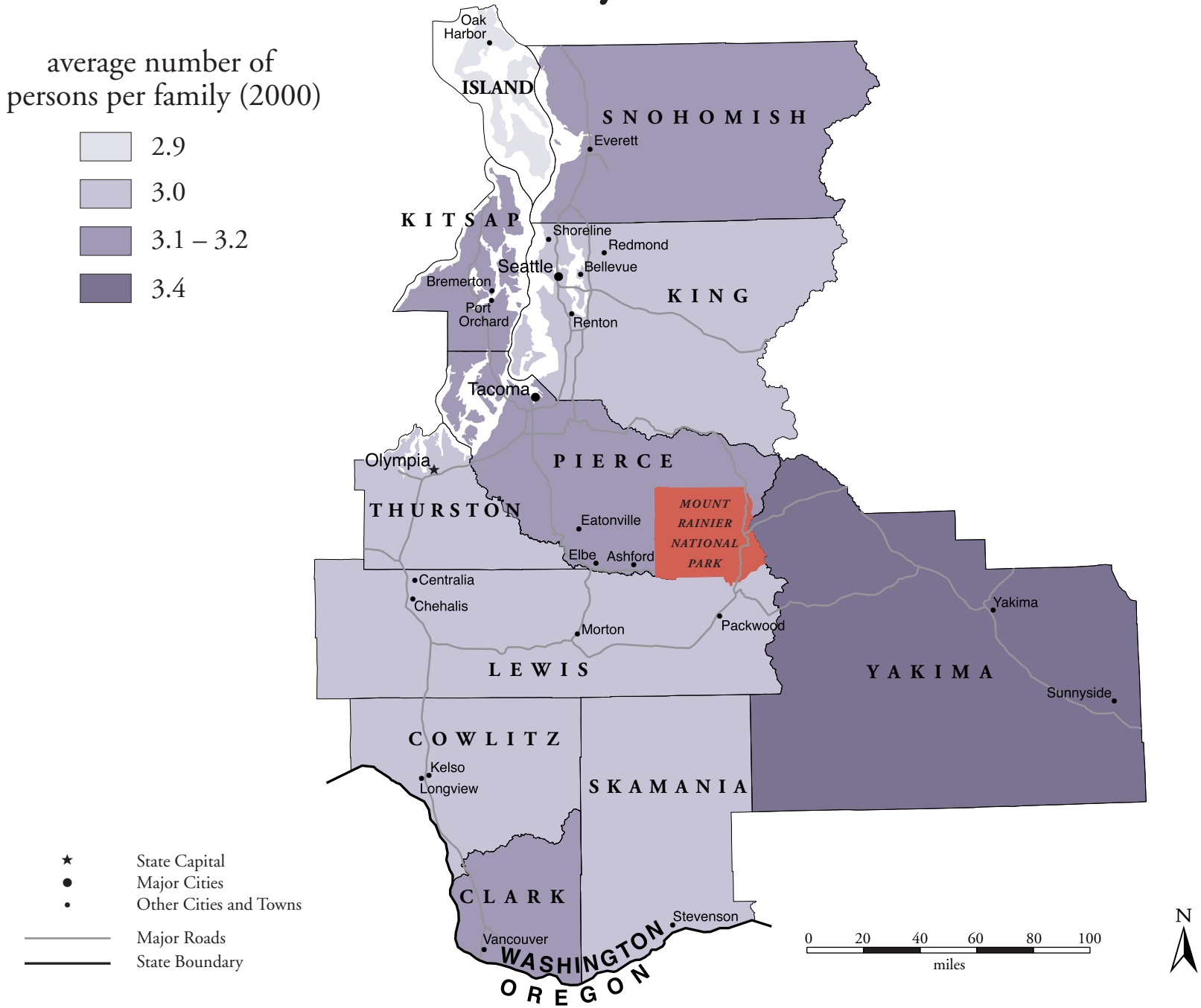
Number Line
showing distribution of data

average number of persons per family (2000)

Yakima	3.4
Clark	3.2
Kitsap	3.1
Pierce	3.1
Snohomish	3.1
Cowlitz	**3.0**
King	3.0
Lewis	3.0
Skamania	3.0
Thurston	3.0
Island	2.9

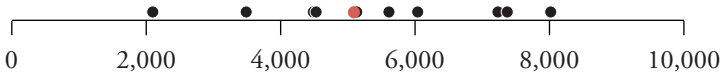
NOTES

Family Size


average number of persons per family (2000)
2.9
3.0
3.1 – 3.2
3.4
Oak Harbor
ISLAND
SNOHOMISH
Everett
KITSAP
Shoreline
Redmond
Seattle
Bellevue
Bremerton
KING
Port Orchard
Renton
Tacoma
Olympia
PIERCE
THURSTON
MOUNT RAINIER NATIONAL PARK
Eatonville
Elbe
Ashford
Centralia
Chehalis
Morton
Packwood
Yakima
LEWIS
YAKIMA
Sunnyside
COWLITZ
Kelso
Longview
SKAMANIA
CLARK
Vancouver
Stevenson
WASHINGTON
OREGON
State Capital
Major Cities
Other Cities and Towns
Major Roads
State Boundary
0 20 40 60 80 100
miles
N

Crime

Crime indicators measure the frequency of various types of lawbreaking. One commonly used crime indicator is the number of serious crimes reported per 100,000 people. Serious crimes refer to murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, arson, and motor vehicle theft. A high crime rate has many impacts on the general population, such as higher insurance rates and a reduced sense of security. Crime also affects government by increasing the demand for police, court services, and prisons. Crime presents direct challenges to park management, as the protection of visitors, park property, and resources becomes a greater priority. Within the Mount Rainier NP region, the number of serious crimes reported per 100,000 people (1995) ranges from 2,090 (Island) to 8,022 (Yakima).



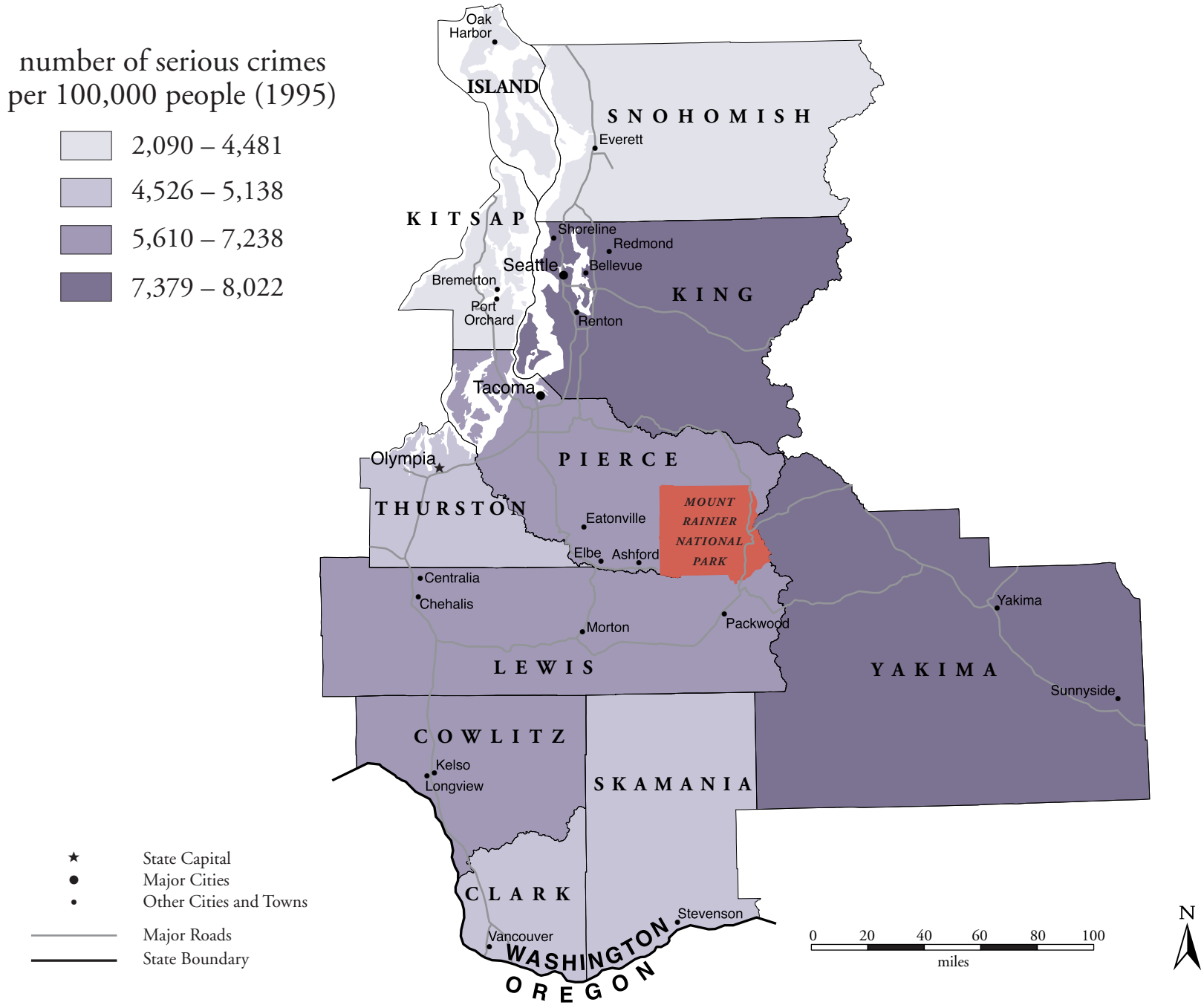
Number Line
showing distribution of data

number of serious crimes per 100,000 people (1995)

Yakima	8,022
King	7,379
Pierce	7,238
Cowlitz	6,040
Lewis	5,610
Clark	**5,138**
Skamania	5,097
Thurston	4,526
Kitsap	4,481
Snohomish	3,485
Island	2,090

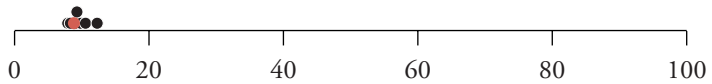
NOTES

Crime


number of serious crimes per 100,000 people (1995)
2,090 – 4,481
4,526 – 5,138
5,610 – 7,238
7,379 – 8,022
Oak Harbor
ISLAND
SNOHOMISH
Everett
KITSAP
Shoreline
Redmond
Seattle
Bellevue
KING
Bremerton
Port Orchard
Renton
Tacoma
Olympia
PIERCE
THURSTON
Eatonville
MOUNT RAINIER NATIONAL PARK
Elbe
Ashford
Centralia
Chehalis
Morton
Packwood
Yakima
LEWIS
YAKIMA
Sunnyside
COWLITZ
Kelso
Longview
SKAMANIA
CLARK
Vancouver
Stevenson
WASHINGTON
OREGON
State Capital
Major Cities
Other Cities and Towns
Major Roads
State Boundary
0 20 40 60 80 100
miles
N

Recreation/Tourism Establishments

The recreation/tourism industry is composed of two categories: lodging (ranging from hotels to campsites) and amusement and recreation (such as concerts and amusement parks). Recreation/Tourism indicators measure the size of the recreation/tourism industry as a share of the overall sales/services sector of the economy. The size of that share is a broad indicator of a county's economic reliance on recreation/tourism. Recreation/tourism establishments can be proponents of actions that enhance their area's attractiveness as a visitor destination (such as transportation improvements, protection of scenic or cultural landmarks, or marketing campaigns). Recreation/tourism establishments also can be vulnerable to, and thus wary of, actions, policies, or chance events that could affect business, such as visitor use restrictions, fires, or economic downturns. Within the Mount Rainier NP region, the county proportion of sales/service establishments that are devoted to recreation/tourism (1992) ranges from 7.9% (Kitsap) to 12.3% (Skamania).[10]



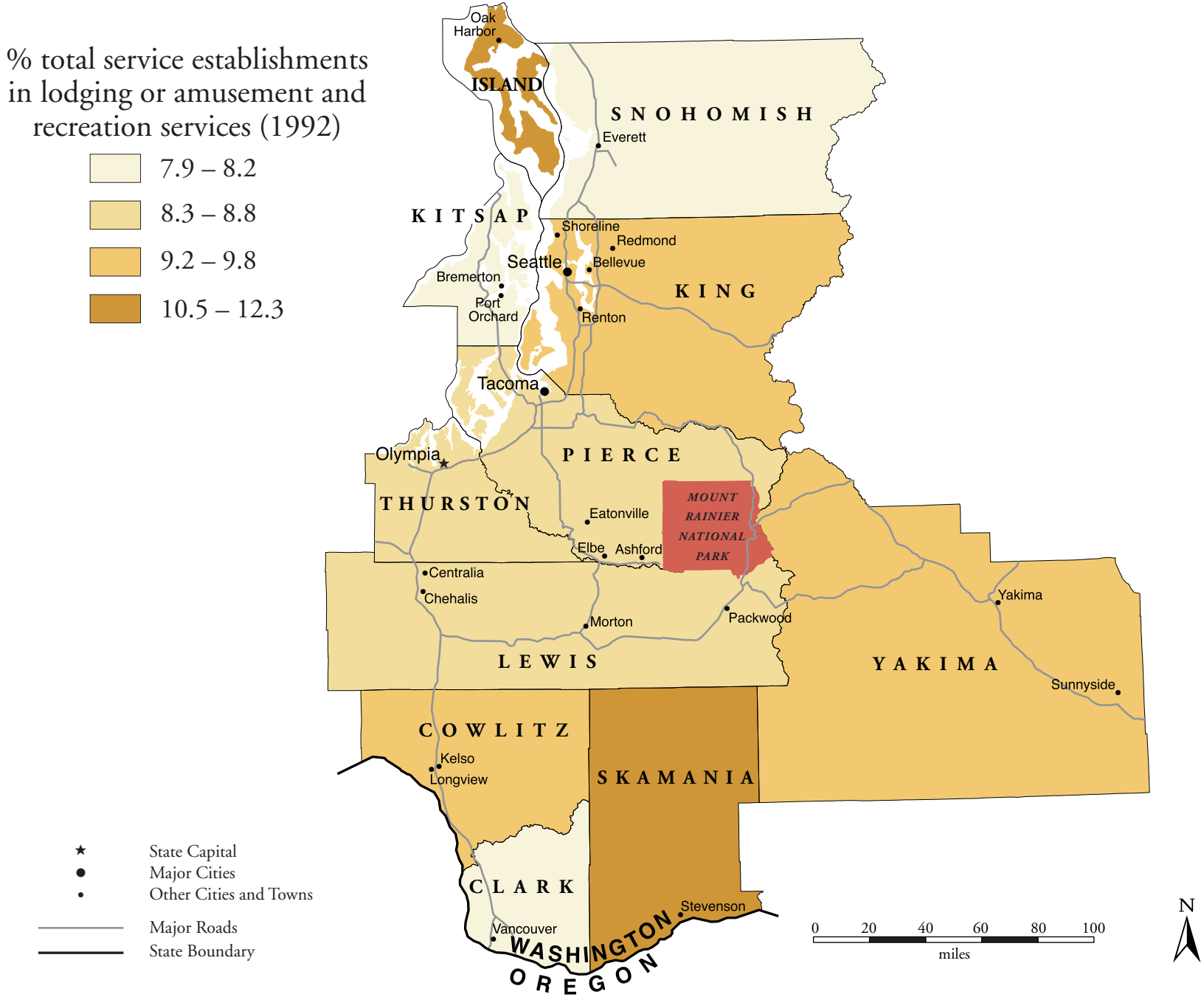
Number Line
showing distribution of data

% total service establishments in lodging or amusement and recreation services (1992)

Skamania	12.3
Island	10.5
Cowlitz	9.8
King	9.2
Yakima	9.2
Thurston	**8.8**
Pierce	8.4
Lewis	8.3
Snohomish	8.2
Clark	8.0
Kitsap	7.9

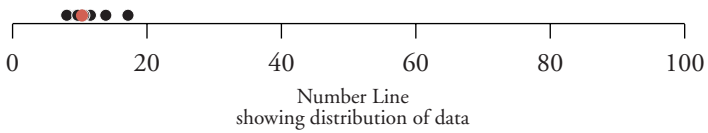
NOTES

Recreation/Tourism Establishments



Recreation/Tourism Revenue

Recreation/tourism revenue is a key indicator of the economic importance of recreation/tourism to a county. Recreation/tourism revenue can be expressed as a percentage of total sales/service receipts. Recreation/tourism establishments can occupy an important position within a county economy because they attract visitor dollars from elsewhere. Secondary economic benefits are realized when these dollars are re-spent within the local economy or deposited in banks, where they provide capital to other businesses. Within the Mount Rainier NP region, the recreation/tourism share of total sales/service receipts (1992) ranges from 8% (Thurston) to 17.1% (Island), with no data available for Skamania county.[11]



Number Line
showing distribution of data

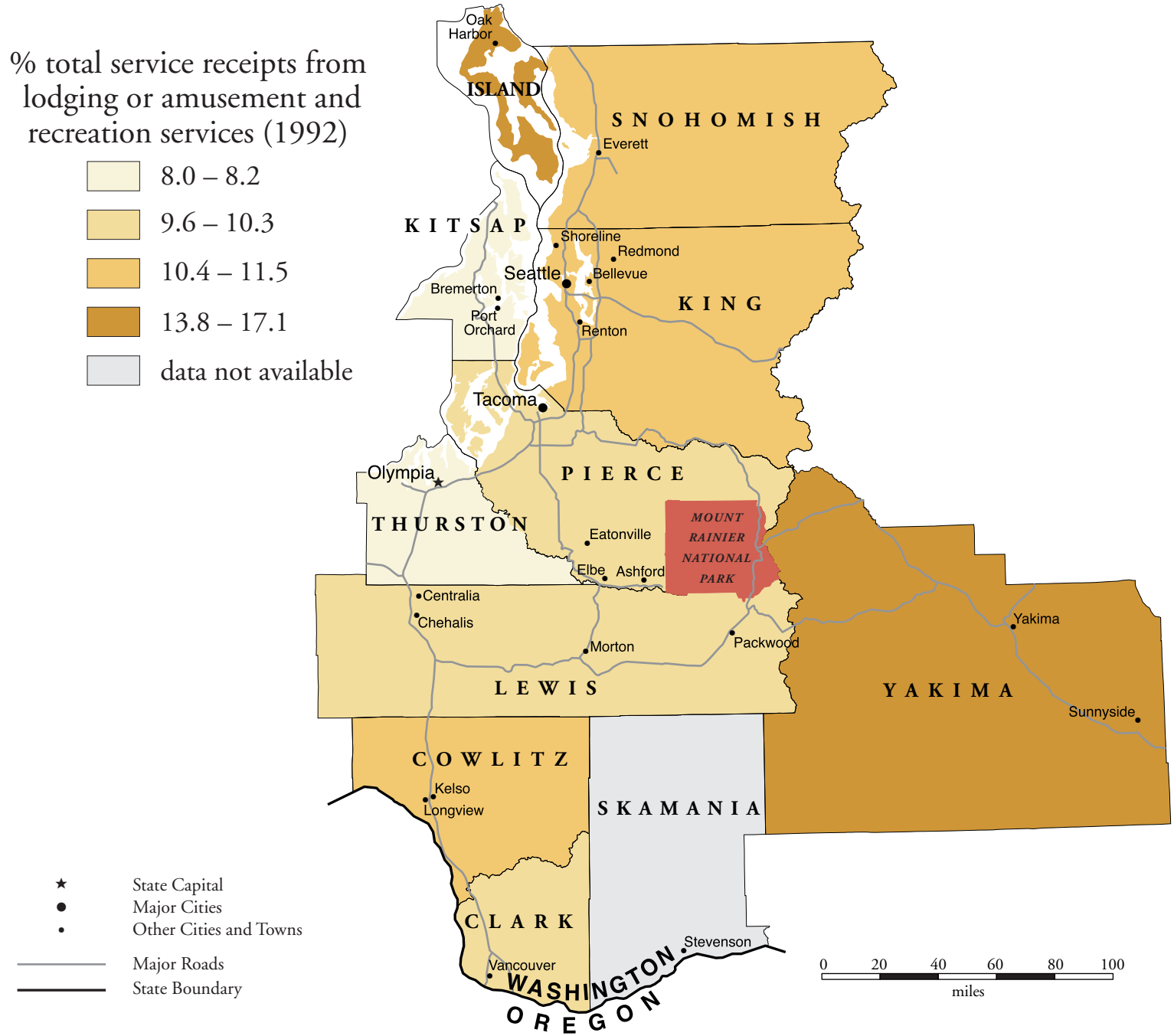
% total service receipts from lodging or amusement and recreation services (1992)

Island	17.1
Yakima	13.8
Cowlitz	11.5
King	10.5
Snohomish	10.4
Clark	10.3
Lewis	9.8
Pierce	9.6
Kitsap	8.2
Thurston	8.0

10.4

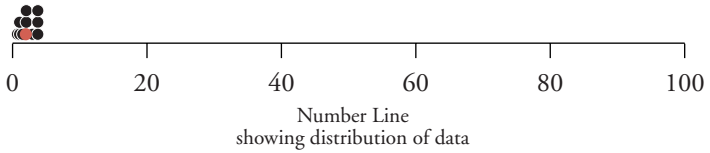
NOTES

Recreation/Tourism Revenue



Recreation/Tourism Employment

The significance of the recreation/tourism industry to a county economy can be indicated by the percentage of county workers that it employs. Workers counted as recreation and tourism employees include country club managers, blackjack dealers, campground employees, fishing guides, motel attendants, and other providers of recreation services. A high level of recreation/tourism employment may mean that residents have more disposable income or that the area attracts visitors or vacationers. Within the Mount Rainier NP region, the percentage of the civilian labor force employed in recreation/tourism (1990) ranges from 1% (Skamania) to 1.6% (Cowlitz).[12]



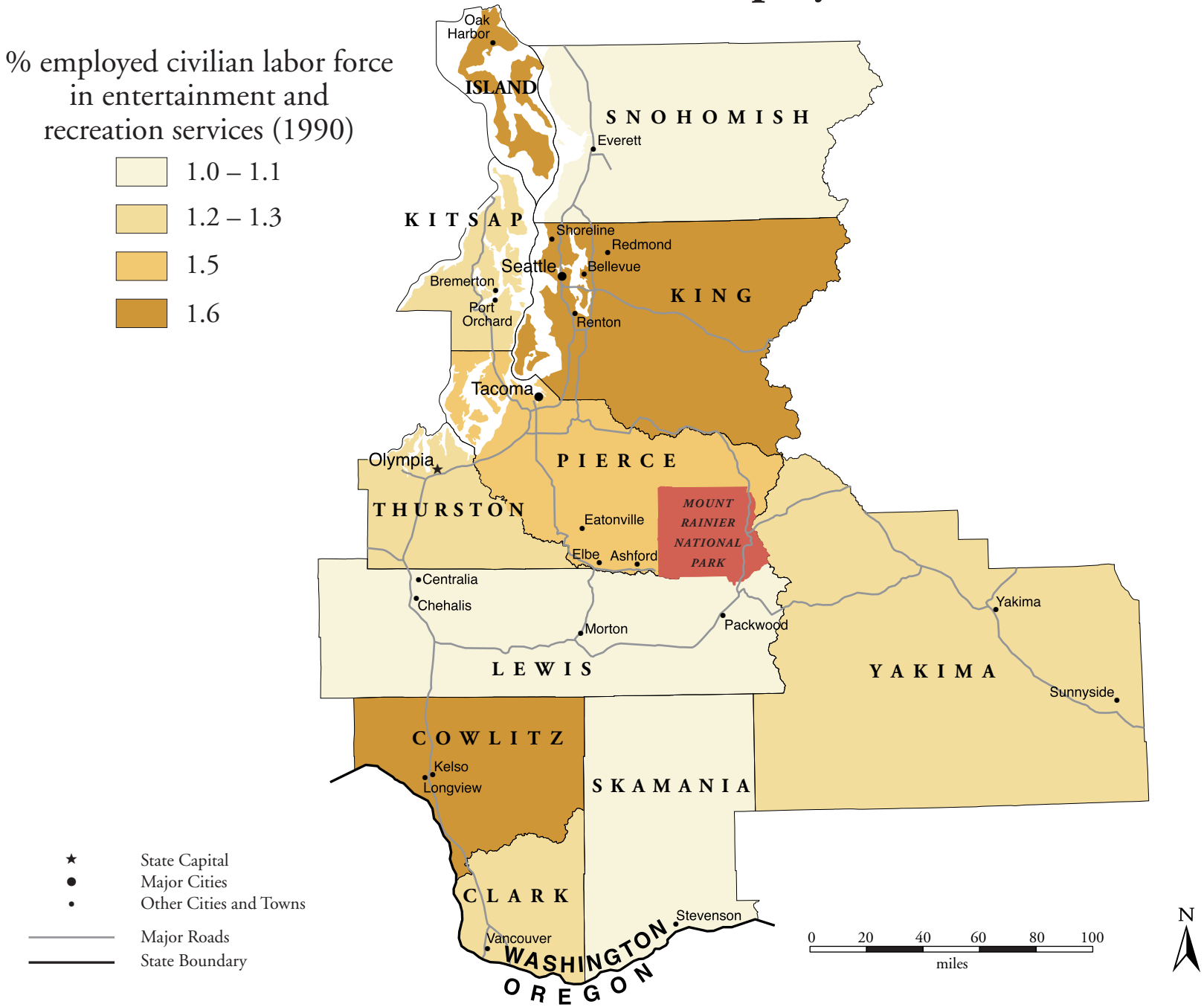
Number Line
showing distribution of data

% employed civilian labor force in entertainment and recreation services (1990)

Cowlitz	1.6
Island	1.6
King	1.6
Pierce	1.5
Clark	1.3
Kitsap	**1.3**
Thurston	1.3
Yakima	1.2
Lewis	1.1
Snohomish	1.1
Skamania	1.0

NOTES

Recreation/Tourism Employment



Seasonal Housing

Seasonal, recreational, and occasional use housing units are those intended for occupancy only during certain seasons of the year and are found primarily in resort areas. A park with a large number of seasonal housing units located near its boundaries can be considered a "destination park." Such parks attract people who can afford to travel a considerable distance and spend a few days in or near the park. Within the Mount Rainier NP region the percentage of total housing units classified for season, recreational, or occasional use (1990) ranges from 0.3% (Clark) to 15.3% (Skamania).

The map displays census tract level data for Lewis, Pierce and Yakima counties only. Census tracts, ranging in number from 1 to 9999, are statistically derived county subdivisions encompassing approximately 4,000 people each.

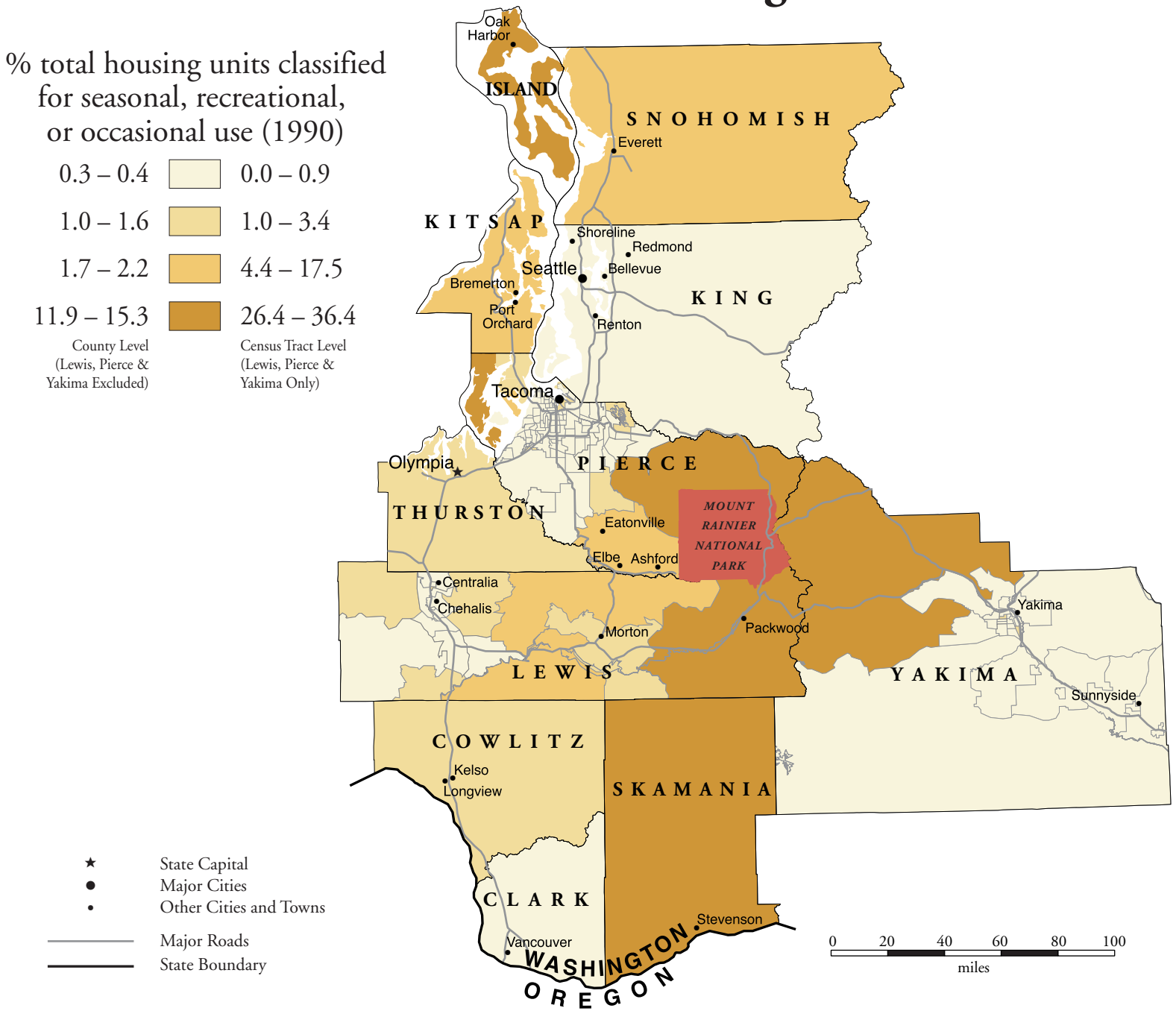
Number Line
showing distribution of data

% total housing units classified for seasonal, recreational, or occasional use (1990)

Skamania	15.3
Island	11.9
Lewis	5.5
Snohomish	2.2
Kitsap	1.7
Thurston	**1.6**
Yakima	1.4
Pierce	1.1
Cowlitz	1.0
King	0.4
Clark	0.3

NOTES

Seasonal Housing



Congressional Districts

Congressional districts form a key layer in the political structure of the Mount Rainier NP region. These districts, roughly equivalent in population, are defined by state legislatures based on the national census and redrawn every ten years. Members of Congress are key points of access for citizens seeking to influence federal-level policies and programs, including those related to federal lands such as national parks and national forests. The Mount Rainier NP region includes all or portions of eight Congressional districts, based on the 1990 Census, out of a total of nine in Washington state.

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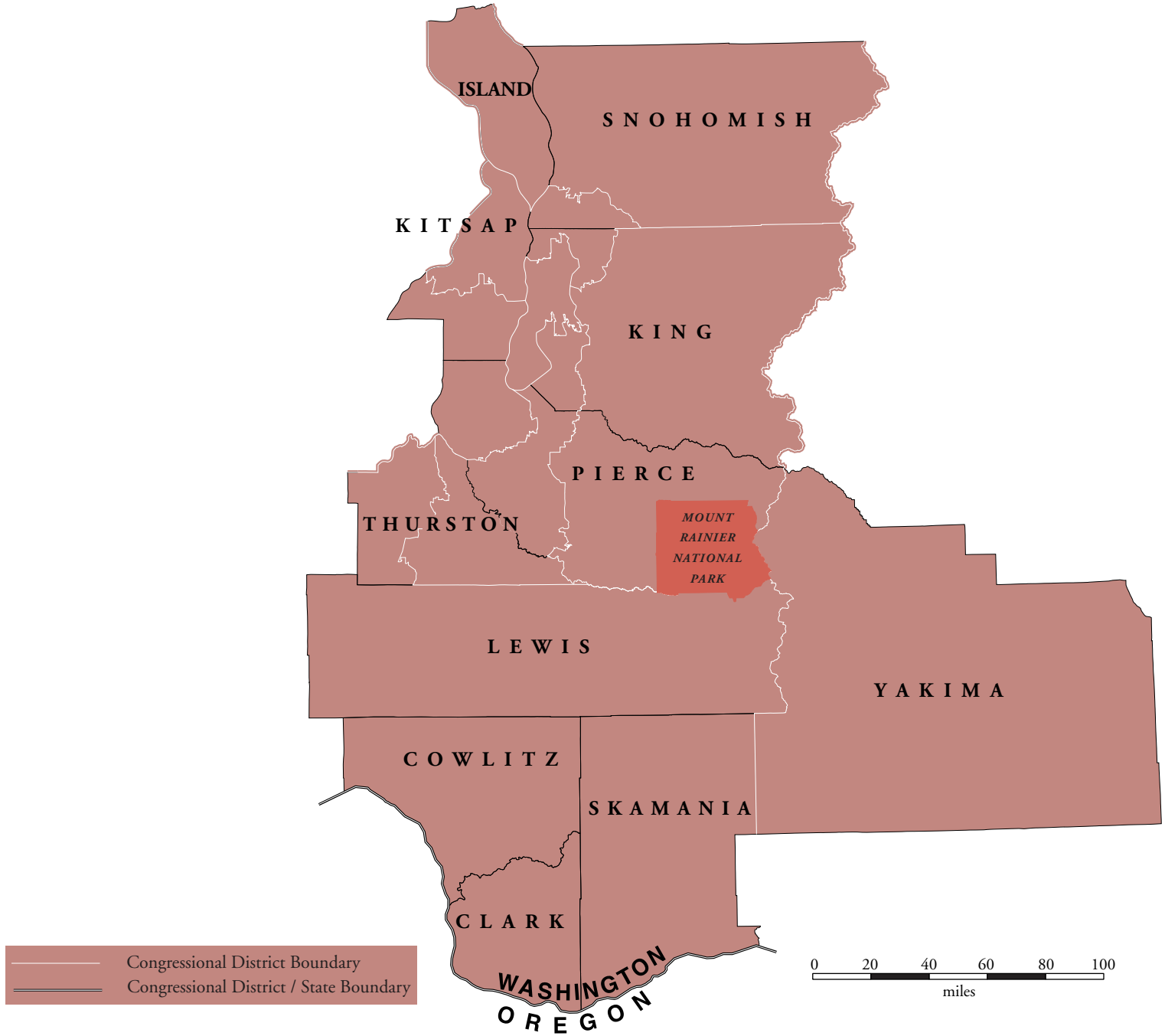
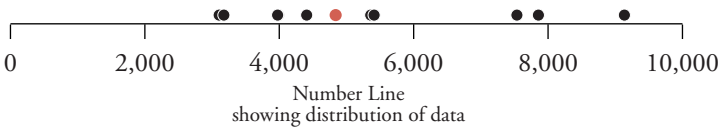
Congressional Districts



Federal Expenditures

The importance of the federal government to a county economy can be indicated by the amount of federal expenditures in the county. These expenditures can be a key source of dollars flowing into the county economy (in contrast, taxes and fees are an outflow of dollars). Federal spending can influence the park region through such wide-ranging initiatives as agricultural subsidies, social programs, military bases, and national parks. Within the Mount Rainier NP region, federal expenditures per person (1998) range from $3,107 (Snohomish) to $9,139 (Kitsap).[13]

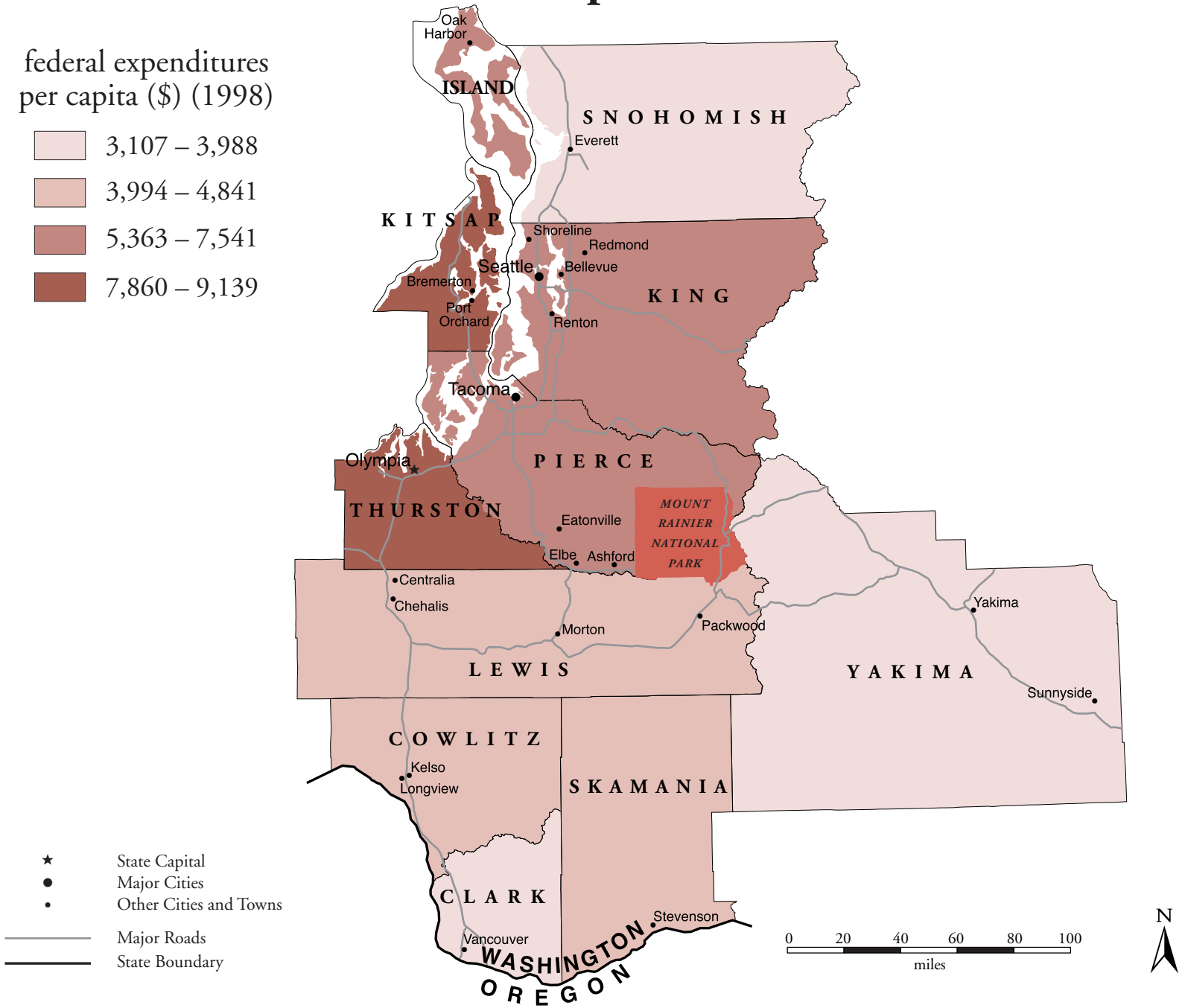


Number Line
showing distribution of data

federal expenditures per capita ($) (1998)	
Kitsap	9,139
Thurston	7,860
Island	7,541
King	5,414
Pierce	5,363
Skamania	**4,841**
Lewis	4,408
Cowlitz	3,994
Yakima	3,988
Clark	3,176
Snohomish	3,107

NOTES

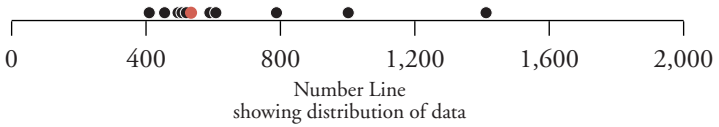
Federal Expenditures



Local Government Revenue

Local government revenue in the form of county taxes, state and federal fiscal aid, and other miscellaneous county service charges, may indicate the degree of local government activity that a county's residents demand or are willing to support. Sources of such state or federal fiscal aid, also known as intergovernmental revenue, can include grants-in-aid, reimbursements for established services such as the care of prisoners or contractual research, and payments in lieu of taxes. Residents of a county with high local government revenue may tend to be more accustomed to government taking an active role in a broad range of programs, whereas residents of a county with low local government revenue may be accustomed to government providing only essential services. Such expectations about the role of government can play a role in shaping local and regional responses to resource management challenges. Within the Mount Rainier NP region, local government revenue per person (1997) ranges from $409 (Yakima) to $1,412 (Skamania).

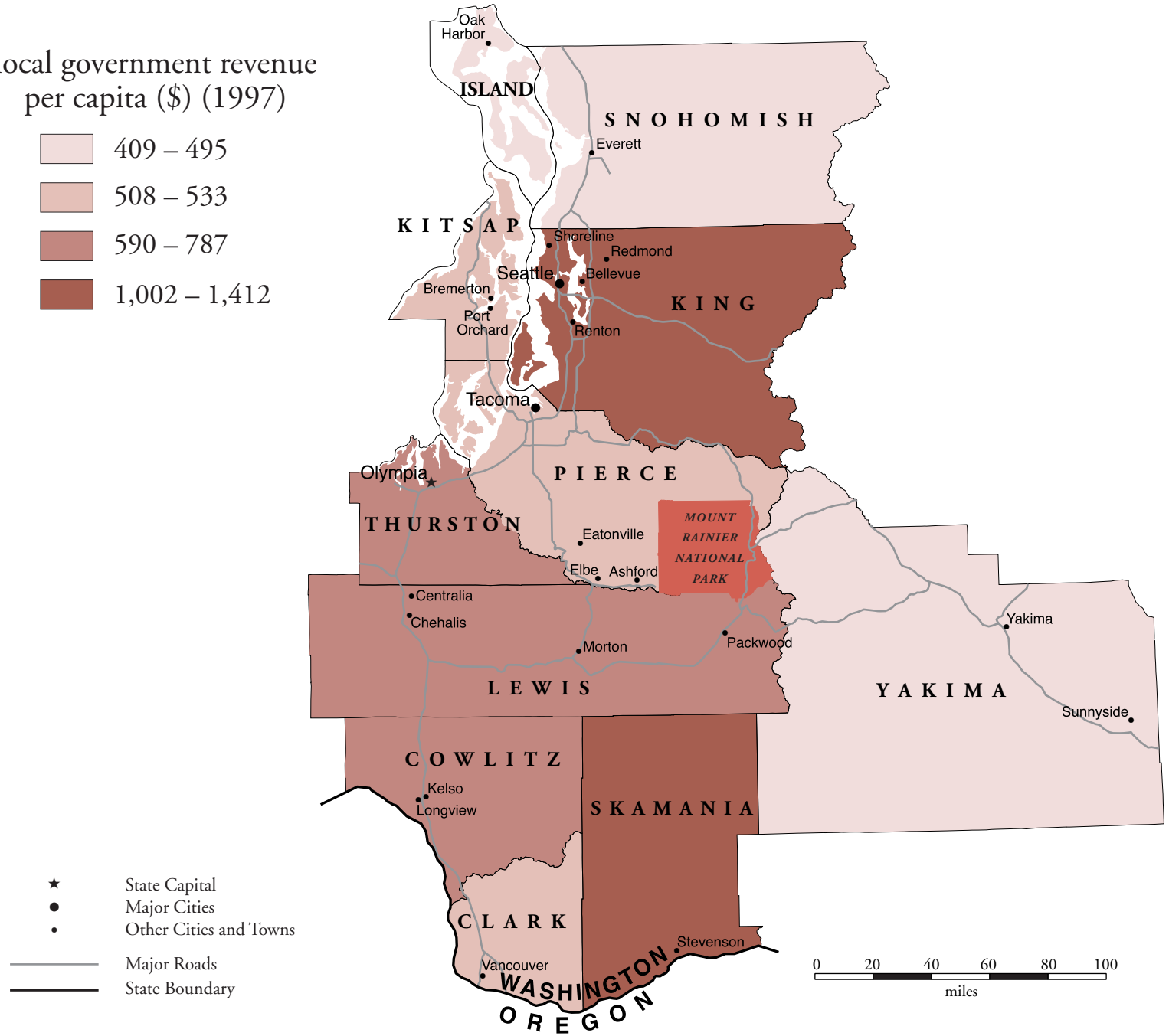
local government revenue per capita ($) (1997)	
Skamania	1,412
King	1,002
Lewis	787
Cowlitz	608
Thurston	590
Clark	**533**
Kitsap	520
Pierce	508
Snohomish	495
Island	457
Yakima	409



Number Line
showing distribution of data

NOTES

Local Government Revenue



Ecoregions

Ecoregions are areas in which similar climate, landforms, and soil exist and support similar communities of vegetation and animals. People affect natural systems within an ecoregion through such activities as agriculture, development, the creation of protected areas, hunting, and the introduction of non-native species. Natural resource protection efforts throughout an ecoregion may share many of the same approaches and techniques, since these efforts often focus on maintaining or restoring similar communities of indigenous animals and plants. Hence, many challenges of resource protection can be fruitfully addressed at the ecoregional level. The Mount Rainier NP region includes parts of three ecoregion divisions. The western part of the region is classified as the Marine division. The central part of the region, which includes the park, and the far western parts of Lewis and Cowlitz counties are classified as the Marine Regime Mountains division. The far eastern part of Yakima county is classified as the Temperate Desert division.

Bailey's Ecoregions

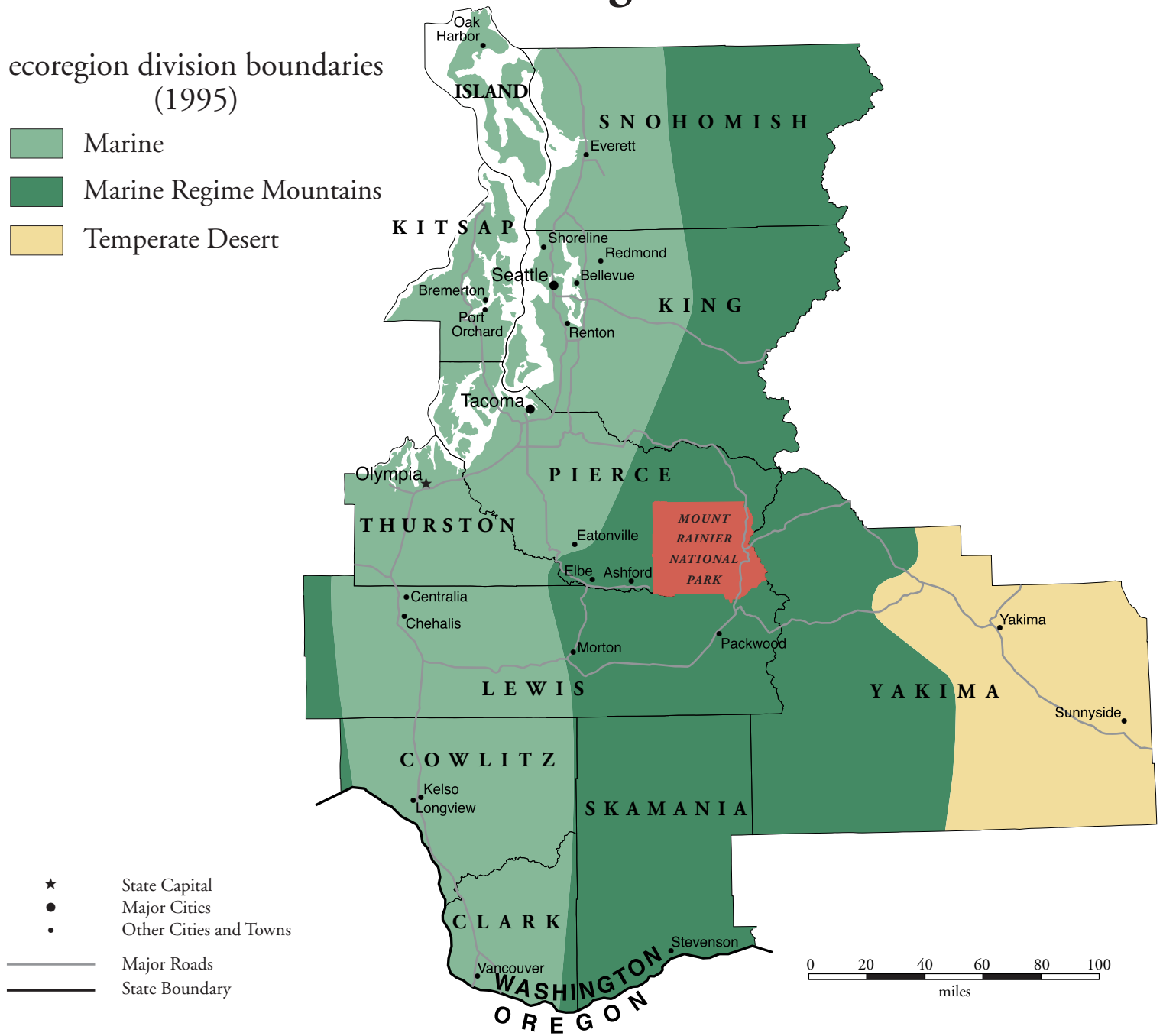
Ecoregions are ecosystems of regional extent, differentiated according to a hierarchical scheme, which uses climate and vegetation as indicators of the extent of each unit. Ecoregional classifications were developed by Robert Bailey of the U.S. Forest Service, U.S. Department of Agriculture (Bailey, Robert G. 1995. Description of the ecoregions of the United States (2nd edition). Misc. Pub. No. 1391, Map scale 1:7,500,000. Following are abridged descriptions of the three ecoregions, which overlay the Mount Rainier NP region.

Marine – mild winters and relatively cool summers with a rather narrow range of temperatures because the division borders the ocean. Precipitation is abundant throughout the year, but is markedly reduced during the summer. Cooler air temperatures reduce evaporation and produce a very damp, humid climate with much cloud cover and fog, which compensates for the summer drought. Dense coniferous trees dominated the vegetation. Principal trees are western red cedar, western hemlock, and Douglas fir. The interior valleys often contain deciduous trees, such as big-leaf maple, Oregon ash and black cottonwood. Poorly drained sites with swamp or bog communities are abundant.

Marine Regime Mountains – the lower elevations of this division have a similar climate to the marine division. In the higher elevations, the proportion of precipitation falling as snow increases. On high mountains, all precipitation may be snow, which reaches depths of 50 to 65 feet. East slopes are much drier than west slopes, accumulating less than 20 inches of precipitation per year. Coniferous trees dominate the region and all but the highest peaks are covered by forest.

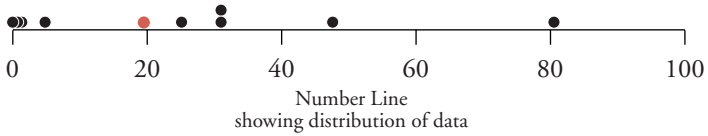
Temperate desert – low rainfall and strong temperature contrasts between summer and winter. Aridity increases markedly in the rain shadow of the Pacific mountain ranges. Typically composed of sagebrush vegetation.

Ecoregions


ecoregion division boundaries (1995)
Marine
Marine Regime Mountains
Temperate Desert
Oak Harbor
ISLAND
SNOHOMISH
Everett
KITSAP
Shoreline
Redmond
Seattle
Bellevue
Bremerton
KING
Port Orchard
Renton
Tacoma
Olympia
PIERCE
THURSTON
MOUNT RAINIER NATIONAL PARK
Eatonville
Elbe
Ashford
Centralia
Chehalis
Morton
Packwood
Yakima
LEWIS
YAKIMA
Sunnyside
COWLITZ
Kelso
Longview
SKAMANIA
CLARK
Stevenson
Vancouver
WASHINGTON
OREGON
State Capital
Major Cities
Other Cities and Towns
Major Roads
State Boundary
0 20 40 60 80 100
miles
N

Federal Lands

One indicator of the federal government's role in regional resource management is the amount of land under federal management. This amount can be measured as a percentage of the total land area in each county. Stewardship of private land is carried out through a combination of regulation, market forces, and voluntary action. In contrast, stewardship of public land is carried out through direct implementation of agency policies. Thus the variation in public versus private land management across the park region can significantly influence the design and implementation of resource protection strategies. Within the Mount Rainier NP region, land under federal management (1998) ranges from 0% (Kitsap) to 80.3% (Skamania).[14]

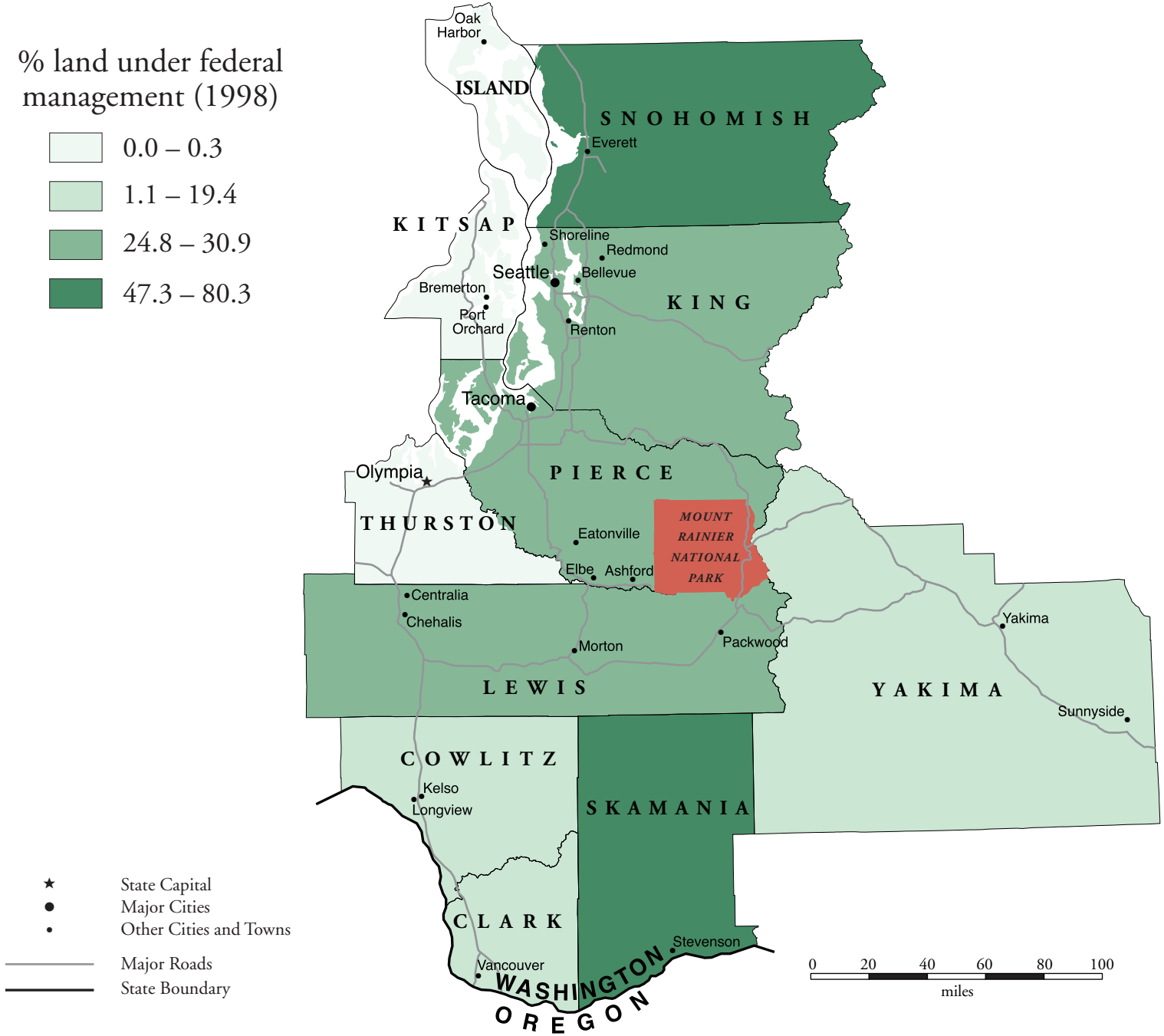


Number Line
showing distribution of data

% land under federal management (1998)	
Skamania	80.3
Snohomish	47.3
Lewis	30.9
Pierce	30.9
King	24.8
Yakima	**19.4**
Cowlitz	4.7
Clark	1.1
Island	0.3
Thurston	0.1
Kitsap	0.0

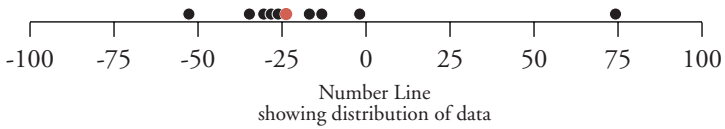
NOTES

Federal Lands



Change in Farmland

Changes in the amount of farmland provide an indication of economic and land use trends among counties in the park region. Land can be converted to farming because of increased demand for agricultural products or because new technology, business practices, or government programs make farming profitable. Land can be taken out of farming due to soil depletion, competition from other growers elsewhere, loss of labor, or conversion of land to other (often urban) uses. Within the Mount Rainier NP region (1982-1997), the amount of farmland decreased in all counties, except one. The change ranged from a decrease of 52.8% (Skamania) to an increase of 74.3% (Kitsap).[15]

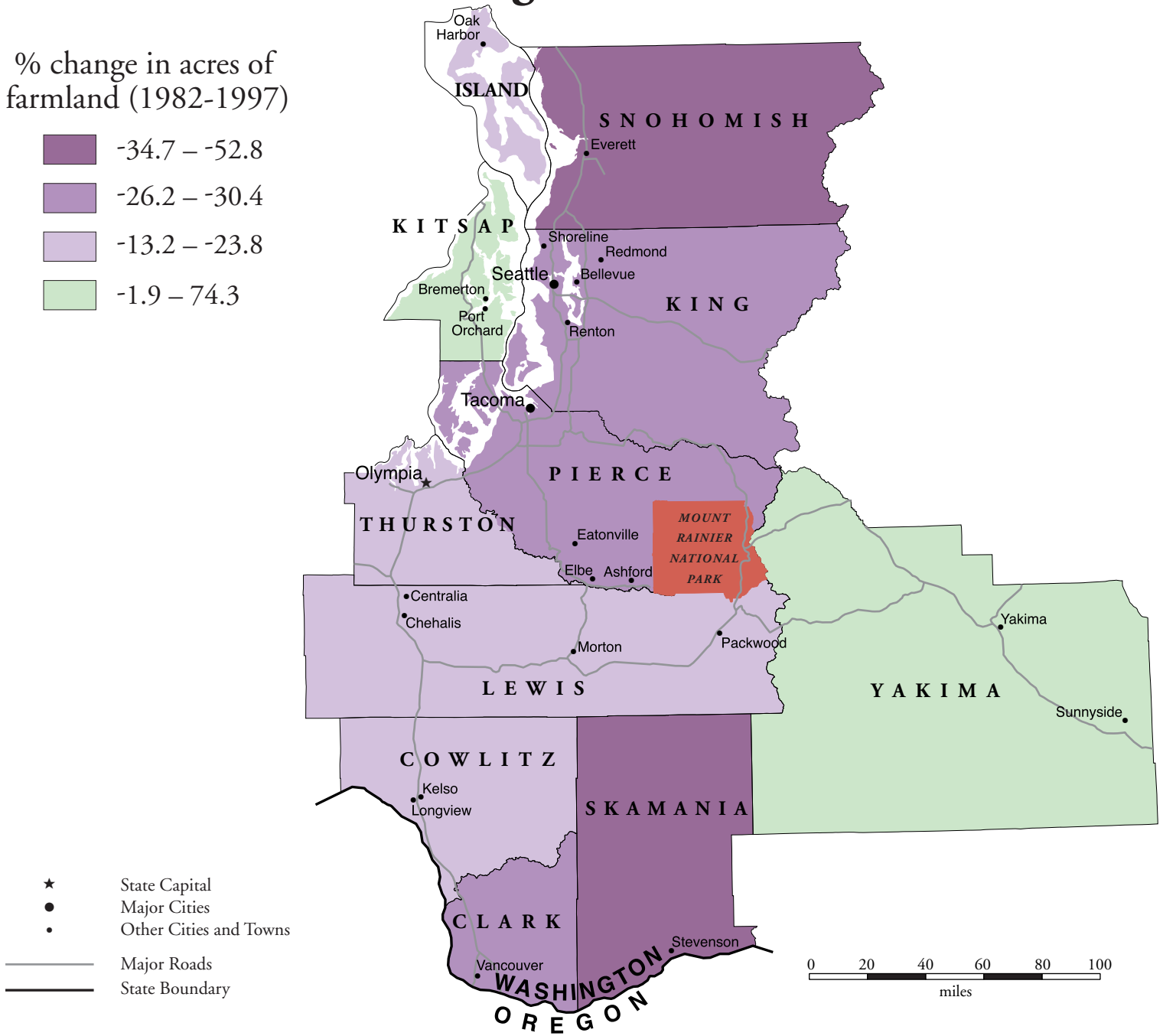


Number Line
showing distribution of data

% change in acres of farmland (1982-1997)	
Kitsap	74.3
Yakima	-1.9
Lewis	-13.2
Thurston	-16.8
Island	-23.8
Cowlitz	**-23.8**
Pierce	-26.2
Clark	-28.3
King	-30.4
Snohomish	-34.7
Skamania	-52.8

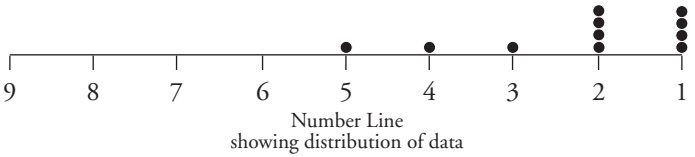
NOTES

Change in Farmland



Urbanization

Urbanization is a measurement of the degree to which land has been developed as towns and cities. The political and economic priorities of more urbanized counties tend to differ from those of less urbanized counties. The concentration of people in towns, cities, and large metropolitan areas creates opportunities for cooperative efforts (such as municipal water systems, public transportation, and a host of non-governmental organizations) but also can increase the incidence of problems such as congestion, air pollution, and habitat fragmentation. The Economic Research Service classifies counties' degree of urbanization along a continuum ranging from completely rural to large metropolitan. Within the Mount Rainier NP region (1997), seven of the eleven counties are classified as belonging to either "small metropolitan" or "large metropolitan" areas.[16]



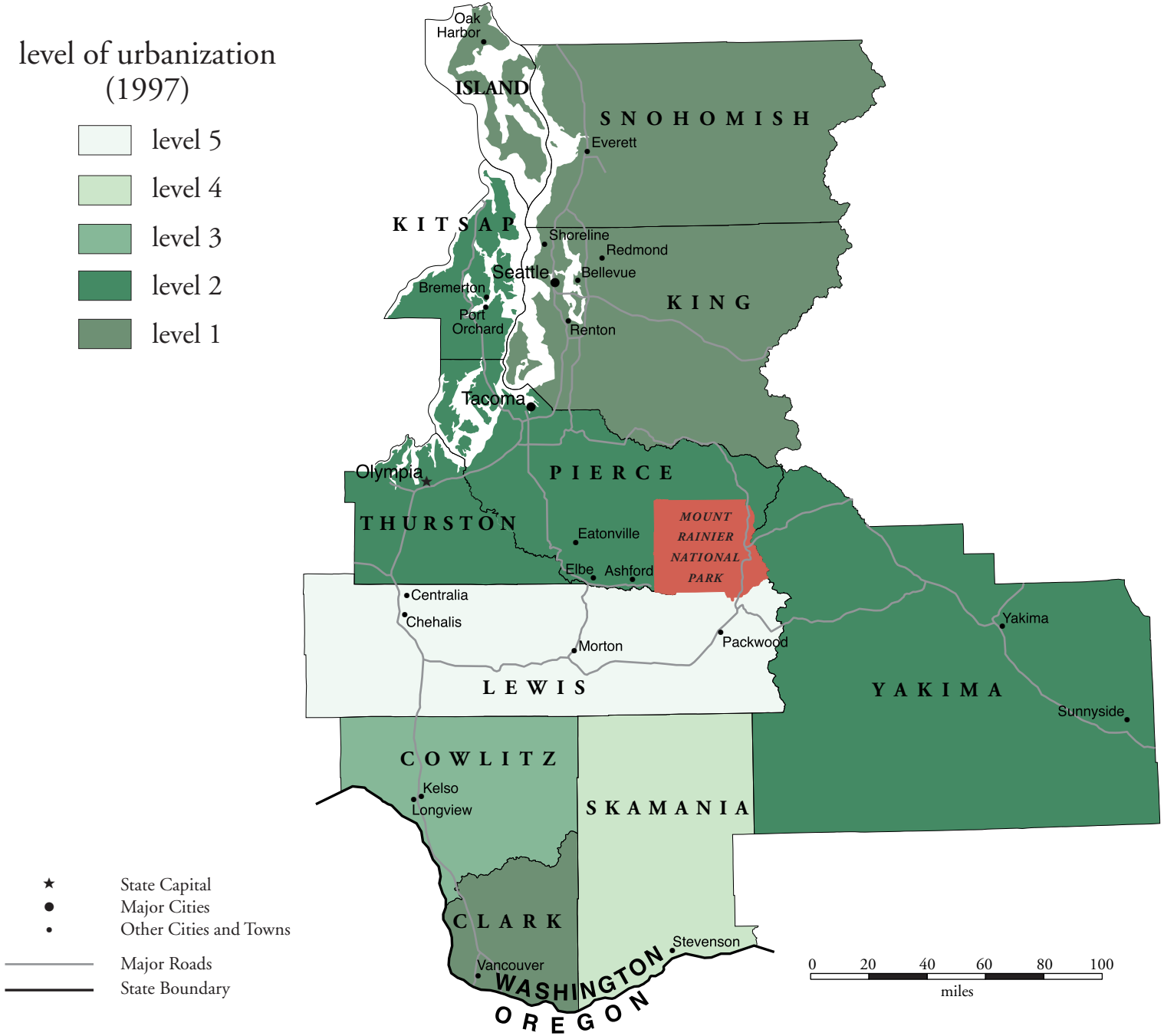
Number Line
showing distribution of data

level of urbanization (1997)	
Clark	1
Island	1
King	1
Snohomish	1
Kitsap	2
Pierce	2
Thurston	2
Yakima	2
Cowlitz	3
Skamania	4
Lewis	5

1 Part of large metro area of 1 million+
2 Part of small metro area of <1 million
3 Adjacent to large metro area, and has city of 10,000+
4 Adjecent to large metro area, and does not have city of 10,000+
5 Adjecent to small metro area, and has city of 10,000+

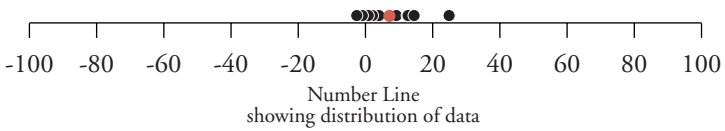
NOTES

Urbanization



Change in Building Permits

One indicator of growth in a local economy is the annual change in the number of building permits issued for new privately-owned housing units. Growth in the number of building permits directly implies an accelerating demand for construction labor, supplies, and services. It indirectly implies that families are growing, or that industries or are moving into an area and expanding economic output. Rapid growth can generate new political priorities (such as greater demand for roads and schools) and can increase land values. Growth also alters the human impact within the ecosystem through effects such as increased water consumption, loss of cropland or habitat, or greater valuation of open space. Within the Mount Rainier NP region, the average change in the number of building permits issued annually (1987-1997) ranges from a decrease of 2.6% (Kitsap) to an increase of 24.8% (Cowlitz).[17]



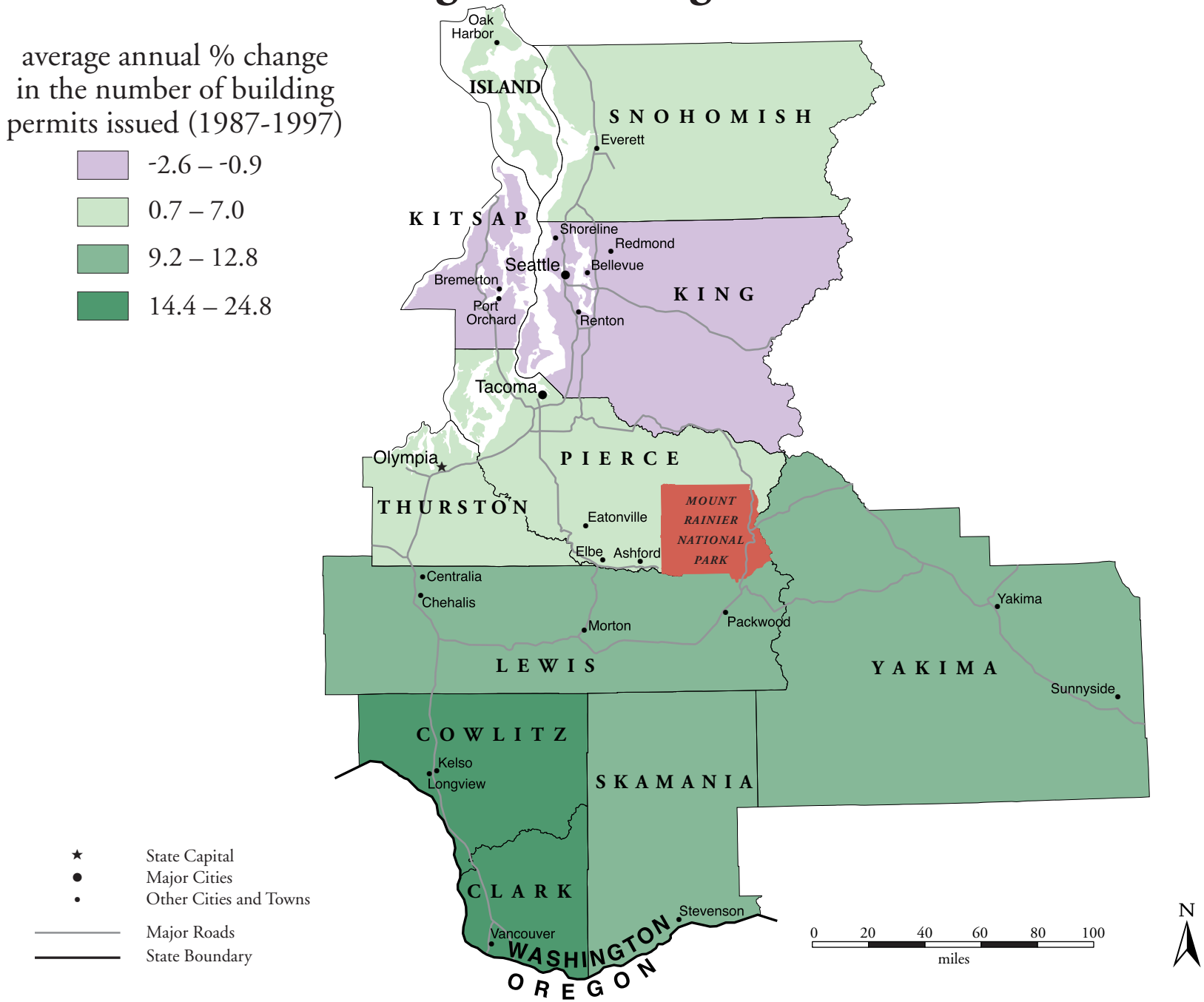
Number Line
showing distribution of data

average annual % change in the number of building permits issued (1987-1997)

Cowlitz	24.8
Clark	14.4
Lewis	12.8
Skamania	12.5
Yakima	9.2
Snohomish	**7.0**
Island	4.0
Pierce	1.9
Thurston	0.7
King	-0.9
Kitsap	-2.6

NOTES

Change in Building Permits



Conclusion: Using This Atlas for Park Management

A national park functions as part of a regional human ecosystem. A natural ecosystem can be understood in terms of factors such as flora, fauna, rainfall, temperature, elevation, and soil. Similarly, a *human ecosystem* can be understood in terms of factors such as population, commerce, social and cultural practices, politics, and land use patterns.

The regional human ecosystem, like the natural ecosystem, strongly influences the long-term health of the park's natural and cultural resources. Just as a park may be concerned with upstream activities outside its boundaries yet inside its watershed, parks are also concerned with human activities taking place outside their boundaries yet inside their region. Thus, knowledge of natural and human conditions external to a park is as essential to park management as knowledge of internal natural and cultural conditions.

This atlas focuses on human activities and features in the region surrounding Mount Rainier National Park. Five primary applications for this atlas as a tool for park management are:

- monitoring activities and analyzing trends that could have short or long-term impacts on the park,
- making comparative studies, both within the region and between regions,
- assessing potential social impacts of management decisions,
- supporting collaborative decision-making and public participation, and
- educating park staff and other stakeholders about regional socioeconomic trends.

Monitoring activities and analyzing trends. The standardized data sources and presentation format of this atlas allow it to serve as a baseline for long-term monitoring of human conditions and trends that impact the park, such as immigration, economic shifts, or changes in the level of poverty. These human conditions and trends can have significant implications for park planning and management. For example, the atlas can be consulted to determine trends in the prevalence of English language ability among regional residents. This information could be important in designing interpretive and public participation programs that can increase access to and advocacy on behalf of the park. The atlas can be used to gain knowledge about the overall structure of and local variations in the regional economy. This information could be important to developing a strong collaborative working relationship with regional business leaders. The atlas can be examined to recognize trends in land use. This information could support proactive planning to mitigate potential impacts of development such as habitat fragmentation, degradation of air or water quality, or intrusions upon historic settings and/or scenic values.

Comparative studies. This atlas can support comparative studies of two kinds. First, the atlas can be used to compare counties within the region. By displaying the range of values for a particular indicator or a set of indicators, the atlas can help identify specific counties where it may be desirable to take (or *avoid* taking) certain management actions because of the potential impact on the human ecosystem. Second, the atlas can be used to make comparisons with other park regions. Potential management actions can be evaluated in terms of how effective they have been for another park unit where similar regional socioeconomic factors are involved.

Social impact assessment. Federal law and NPS planning directives require that park managers evaluate the social impacts of potential management actions. The socioeconomic indicators displayed in this atlas can make an important contribution to such social impact assessments. For example, the maps displayed here could be used to help understand the impacts of various park management plans and provide context for assessments at smaller scales, such as local communities.

Collaborative decision-making. In developing general management plans, park staff are directed to "consider the park holistically … as part of the surrounding region" and to conduct planning "as part of cooperative regional planning whenever possible" (Director's Order 1998-2, par. 3.3.1.2). Tools such as this atlas can support the goal of applying a regional perspective to park planning and management. Distribution of this atlas to citizens, elected officials, educators, business and service groups, resource managers, and others can strengthen their ability to effectively participate in park management activities and decision-making. Maps that present facts in a standardized format can be particularly helpful for establishing common ground on which to decide upon management priorities, especially for decisions that affect both the park and the adjacent region.

Education and orientation. The atlas can be used to orient new park staff, as well as central office staff, to some of the basic facts about human activities in the park's region of interest. It can also serve as a tool for sharing information about socioeconomic trends with the public, gateway communities, media, and Congress.

In conclusion, effective park management requires a clear understanding of human activities in the surrounding region that can impact park resources and operations. By providing the "basic facts" about such activities, this atlas can help managers, citizens, and others better provide for the preservation and enjoyment of Mount Rainier National Park.

Appendices

Appendix 1: Data Sources for Indicators

The data sources used to obtain the measures for the socioeconomic indicators are listed below. The indicators listed on the left correspond to the titles of the maps in the atlas. The measure corresponds to the legends used in the maps and the ranked data tables.

INDICATOR	MEASURE	DATA SOURCE
General Population		
*Total Population	total number of people (2000)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/www/cen2000/tablist.html
*Recent Population Change	% change in total number of people (1990-2000)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/www/cen2000/tablist.html
*Projected Population Change	projected % change in total number of people (1998-2020)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
Urban Population	% total population living in urban areas (1990)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
Projected Median Age	projected median age of total population (2020)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
Projected Elderly Population	projected % total population 65 years old and over (2020)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
Domestic Migration	net number of non-foreign migrants (1990-1997)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
International Migration	net number of foreign migrants (1990-1997)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
Economy and Commerce		
*Industry Earnings	% total earnings by industrial category (1996)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
*Employment by Industry	% employment by industrial category (1996)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
Change in Employment by Industry	% change in employment by industrial category (1980-1996)	Woods & Poole Economics, Inc. 1999 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
*Poverty	% total population in poverty (1997)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/hhes/www/saipe/stcty/estimate.html
Social and Cultural Characteristics		
Racial Composition	% total population that is: Hispanic or Latino, White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Some Other Race, or Two or More Races (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
*Racial Diversity	% total population belonging to minorities (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov/
*Educational Attainment	% total population 25 years old and over with some college or college degree (1990)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
English Language Ability	% total population 5 years old and over that does not speak English or does not speak it very well (1990)	GeoLytics, Inc. (1998). CensusCD+Maps [CD-ROM]. East Brunswick, NJ. GeoLytics, Inc. specializes in the compression and distribution of publicly available demographic data to the public, private and nonprofit sectors. http://www.geolytics.com
Spanish Speakers	% total population 5 years old and over that speak primarily Spanish at home (1990)	GeoLytics, Inc. (1998). CensusCD+Maps [CD-ROM]. East Brunswick, NJ. GeoLytics, Inc. specializes in the compression and distribution of publicly available demographic data to the public, private and nonprofit sectors. http://www.geolytics.com
Family Size	average number of persons per family (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov/
Crime	number of serious crimes per 100,000 people (1995)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
Recreation and Tourism		
Recreation and Tourism Establishments	% total service establishments in lodging or amusement and recreation services (1992)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
*Recreation and Tourism Revenue	% of total service receipts from lodging or amusement and recreation services (1992)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
*Recreation and Tourism Employment	% employed civilian labor force in entertainment and recreation services (1990)	U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
Seasonal Housing	% total housing units classified for seasonal, recreational, or occasional use (1990)	GeoLytics, Inc. (1998). CensusCD+Maps [CD-ROM]. East Brunswick, NJ. GeoLytics, Inc. specializes in the compression and distribution of publicly available demographic data to the public, private and nonprofit sectors. http://www.geolytics.com

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
Administration and Government		
*Congressional Districts	Congressional district boundaries (1990)	ESRI, Environmental Systems Research Institute, Inc., is a private firm headquartered in Redlands, California with a focus on GIS (Geographic Information Systems) software development. http://www.esri.com/data/online/tiger/index.html
*Federal Expenditures	federal expenditures per capita ($) (1998)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/prod/www/abs/cffr.html
Local Government Revenue	local government revenue per capita ($) (1997)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/govs/www/cog.html
Land Use		
*Ecoregions	ecoregion division boundaries (1995)	1) USDA Forest Service, Inventory and Monitoring Institute, http://www.fs.fed.us/land/ecosysmgmt/ecoreg1_home.html 2) Bailey, Robert G. (1995). Description of the Ecoregions of the United States (2nd ed.). Misc. Pub. No. 1391, USDA Forest Service, 108 pp.
*Federal Lands	% land under federal management (1998)	U.S. Department of the Interior, Bureau of Land Management. Payment In Lieu of Taxes, Fiscal Year 1998. Washington, DC.
*Change in Farmland	% change in acres of farmland (1982-1997)	1) USDA National Agricultural Statistics Service. Census of Agriculture 1997, http://www.nass.usda.gov/census/ 2) U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://tier2.census.gov/usac/index.html
*Urbanization	level of urbanization (1997)	U.S. Department of Agriculture, Economic Research Service, http://usda.mannlib.cornell.edu/data-sets/rural/97002/
Change in Building Permits	average annual % change in number of building permits issued (1987-1997)	U.S. Department of Commerce, Census Bureau. USA Counties 1998 http://tier2.census.gov/usac/index.html

** Denotes a core indicator, common to all atlases in this series. Additional indicators were selected by park managers to include information specific to their particular management needs.*

Appendix 2: Technical Notes on Map Design

Selection of Base Map Data – The regional base map used to map socioeconomic indicators on the following pages includes state and county boundaries, some of the major roads, major cities, and a few other selected cities and towns. The roads, cities, and towns are included to provide readers with a few familiar points of reference. It should be emphasized that this is not a general purpose atlas of the region, for it focuses only on socioeconomic indicators.

Choropleth Mapping – For most of the maps, data are grouped by quartiles which vary in shading from light to dark (for low to high values). This shading technique, known as choropleth mapping, is usually applied to ratio data; population density, infant deaths per 1,000 live births, and median income are examples. Maps that display total amounts (such as total population) often use other approaches, such as proportional symbols. For clarity, ease of use, and consistent design, choropleth mapping is used for most of the social indicator data.

Quartile Classification – The choice of a *quartile* classification of the data means that for most maps, counties were divided into four classes. Rather than focusing on the actual numerical value of the indicator for each county, the quartile approach emphasizes the variation in data values among counties. The legend accompanying the map allows the reader to see the actual magnitude of variation among the counties for that indicator. Quartiles make it easy for the reader to make intuitive comparisons among counties; the darkest shaded counties are in the "top quarter," the lightest shaded counties are in the "bottom quarter," and so forth. Quartiles also facilitate comparisons between maps in the atlas ("this county ranks in the bottom quartile on all three of these indicators").

Two notes: (1) Whenever the number of counties cannot be evenly divided by four, the convention for this atlas series is to reduce the size of the highest quartile first, then the next quartile if needed, then the third quartile if needed. Hence eleven counties would be divided into groups of 2, 3, 3, and 3, with the group of 2 having the highest data values/darkest shading. (2) Counties with identical data values are grouped in the same quartile, even if this results in quartiles of unequal size.

Note on Political Boundaries – The regional base map depicts the formally defined political boundaries of states and counties. These boundaries include waters surrounding islands.

Map Sources – The context map at the beginning of the atlas was generated from Cartesia Software, 1998, MapArt Geopolitical Deluxe – USA (Lambertville, NJ; http://www.mapresources.com). The standard region map used throughout the atlas was generated from U.S. Census Bureau shapefiles. Contextual information (roads and cities) was obtained from the U.S. Geological Survey (http://www.nationalatlas.gov).

Production – Indicator data for the atlas were compiled in Microsoft Excel 98. These were linked to U.S. Census shapefiles using ArcView GIS 3.1. The GIS files were imported into Adobe Illustrator 8.0, with the Avenza MAPublisher 3.5 plug-in, for final map design. Text was prepared in Microsoft Word 98. The final atlas layout (text, maps, graphics) was completed using Adobe PageMaker 6.5.

Appendix 3: Technical Notes on Measurement of Selected Indicators

[1] **Urban population** is measured as the percentage of the total population living in urban areas. An urban area includes all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas. An urbanized area has a population concentration of at least 50,000 inhabitants, and generally consists of a central city and the surrounding, closely settled, contiguous territory having a density of at least 1,000 persons per square mile. The complete criteria are available from the Chief, Geography Division, U.S. Bureau of the Census, Washington, DC 20233.

[2] **Domestic migration** is measured as the net migration rate (the difference between the number of in-migrants and out-migrants). Since this is based on individual Federal income tax returns (on which filers provide their address for the prior year and the estimate year), the domestic migration figures do not take into account foreign migrants to the U.S. or other foreigners within the U.S. who do not pay U.S. taxes.

[3] **International migration** is measured as the net foreign migration rate (the difference between the number of in-migrants and out-migrants). The Census Bureau estimates the number of foreign immigrants who move into the county during the estimate interval. The county estimates are based on the national estimate of foreign migration developed by the Census Bureau. Estimates include emigration from the United States and the immigration of refugees, legal immigrants, undocumented immigrants, net movement from

Puerto Rico, and federal and civilian citizen movement from abroad. The Census Bureau allocates the national estimate of the number of undocumented immigrants to states and counties by using the distribution of the foreign born population who arrived between 1975 and 1980 and were enumerated as residents in the 1980 census. Legal immigrants and refugees are distributed to counties on the basis of county of intended residence as reported to the Immigration and Naturalization Service.

[4] Economic activity is categorized as belonging to one of four **industry categories**: agriculture/natural resources, construction/manufacturing, sales/services, and government. Individual workers, regardless of their specific job responsibilities, are classified according to the category their overall company or organization belongs to. Thus, while accounting is considered a "service" activity, an accountant for a mining company would be counted as working in "agriculture/natural resources." "Government" includes all federal government workers and all state/local employees, such as teachers, police, firefighters, etc. Even though government jobs may involve construction, natural resource management, or provision of services, they are still counted as belonging to the "government" category.

[5] See note above on industry categories.

[6] See note above on industry categories.

[7] **Poverty** is measured as the percentage of the total population living below the poverty level (1997). The poverty level is defined as earnings of $16,400 or less for a family of four persons. Poverty thresholds are applied on a national basis and are not adjusted for regional, state, or local variations in the cost of living.

[8] **Racial composition** is based upon self-identification by people responding to the U.S. Census; it does not denote any clear-cut scientific definition of biological stock. Census respondents are asked to classify themselves according to the race with which they most closely identify. Specific responses such as "Polish," "Haitian," "Thai," or "Lakota" were coded more generally as belonging to one of six general categories (White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Some Other Race respectively). Respondents to the 2000 Census were also offered the option of identifying themselves as belonging to Two or More Races (this refers to a combination of two or more of the racial categories listed above). Persons of Hispanic or Latino origin may be of any race.

[9] **Racial diversity** is defined for this measure as the percentage of the population that classifies themselves as being non-White. Diversity by this definition does not necessarily measure the degree of "variety" in the population. For example, a hypothetical county with a 90% Asian population would be considered as being more "diverse" than a county in which each of the six major ethnic groups constituted 10% of the population (in the latter case, diversity would be measured as 60%). The Hispanic or Latino origin category was not included in this measure because persons of Hispanic or Latino origin may be of any race (including White).

[10] **Recreation/Tourism**, part of the broader sector of sales/services, includes a wide range of business establishments that fall within two general categories, including: 1) hotels motels, rooming houses, recreational camps, campsites, and RV parks and 2) amusement and recreation services, such as concerts, amusement parks, bowling alleys, country clubs, and casinos.

[11] See note above on recreation/tourism. No data is available for Skamania county to avoid the disclosure of confidential information.

[12] See note above on recreation/tourism.

[13] **Federal expenditures** include expenditures, or obligation for, direct payments for individuals, procurement, grants, salaries and wages, direct loans, and guaranteed loans and insurance. Grant awards are reported by county of the initial recipient; thus if the initial recipient is the state government, the county in which the state capital is located is reported as having "received' that "pass-through" grant, even though the monies are subsequently distributed to other local governments. Payments in lieu of taxes are not included in federal expenditures. All departments of the federal government are included in federal expenditures.

[14] **Federal lands** include all tax-exempt federal lands administered by the Bureau of Land Management (BLM), the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Forest Service, federal water projects, and certain military installations (U.S. Navy and Airforce Bases are not included.). The BLM calculates the amount of federal land within counties in order to administer the federal government's payments-in-lieu-of-taxes (PILT) program.

[15] **Farmland** consists primarily of agricultural land used for crops, pasture, or grazing. It also includes woodland and wasteland that is part of a farm operator's total operation.

[16] The Economic Research Service classifies counties according to their level of **urbanization**. The classification consists of nine mutually-exclusive codes:

METROPOLITAN COUNTIES

1) Counties in large metropolitan areas of 1 million or more residents
2) Counties in small metropolitan areas of less than 1 million residents

NONMETROPOLITAN COUNTIES

Adjacent to a large metro area and

3) contains all or part of its own city of 10,000 or more residents
4) does not contain any part of a city of 10,000 or more residents

Adjacent to a small metro area and

5) contains all or part of its own city of 10,000 or more residents
6) does not contain any part of a city of 10,000 or more residents

Not adjacent to a metro area and

7) contains all or part of its own city of 10,000 or more residents
8) contains all or part of its own town of 2,500 to 9,999 residents
9) totally rural, does not contain any part of a town of 2,500 or more residents

[17] The issuing of **building permits** for privately-owned housing units does not necessarily imply that a community is growing, since any community will experience an ongoing replacement of aging houses and buildings. Also, a catastrophic event such as a major storm or fire can generate a short-term surge in the number of building permits issued. Thus a better indicator of growth is the average annual change in the number of building permits issued over a ten-year period. Changes in local codes or enforcement can also affect the number of building permits issued. This measure includes data about new housing units intended for occupancy and maintained by the occupants. It excludes hotels, motels, and group residential structures such as nursing homes and college dormitories. All public housing and nonresidential buildings are also excluded.

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